

# The PC Compatible Magazine

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December 1986

# SOFT SECTOR



## At Last, a Magazine for PC Compatibles!

With beginners' tutorials, technical information, type-in-and-run programs, new product reviews and much, much more!



And Wrapping It All Up, Our Holiday Gift Guide





## Get real PC power in an affordable home computer

There's no reason to settle for a "game" computer this Christmas. Now you can get a Tandy 1000 EX for the price of a game machine. Best of all, you'll get a CM-5 Color Monitor (25-1023) as our gift to you when you buy the Tandy 1000 EX.

The Tandy 1000 EX (25-1050) is a true PC-compatible computer, ready to use the MS-DOS® based software you bring home from the office, as well as software designed for the home or classroom. Inside the sleek one-piece design there's a 5<sup>1</sup>/<sub>4</sub>" disk drive, 256K RAM and a three-voice sound circuit with a built-in speaker and a headphone jack for private listening.

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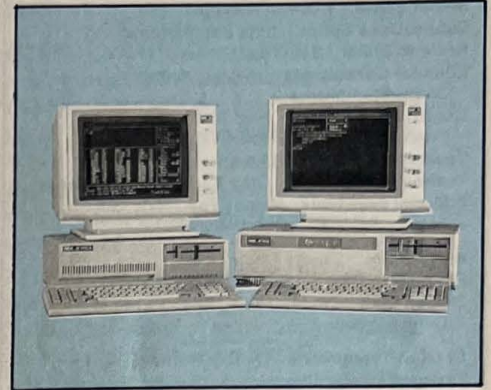
\*TELECOM requires optional modem. Prices apply at Radio Shack Computer Centers and participating stores and dealers. Tandy 1000 EX monitor platform not included (29.95). DMP-130 printer reg. 349.95. Sale begins 10/21/86, ends 12/24/86. MS-DOS/Registered TM Microsoft Corp.

For more information write to: Dept. 87-A-452B, 300 One Tandy Center, Ft. Worth, TX 76102



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# SOFT SECTOR

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# Letters to the Editor



## GREAT IDEA!

Editor:

We are enthusiastic about **SOFT SECTOR**, The PC Compatible Magazine. A magazine devoted to the needs of PC Compatible users is a great idea. Your readers need not feel inferior to those who use the "real" computers now that they have a magazine that gives them the information they want.

We wish you the best of luck as you reach out to the entire compatible market. My partner was acquainted with **SOFT SECTOR** when it was aimed at the Sanyo crowd. He assures me this is a quality publication. We are sure you will be successful in your endeavors.

Linda D. Jeffries  
Mossy Rock Systems  
Sacramento, CA

## SURE SUPPORT

Editor:

The "Letters to the Editor" column occasionally has a letter relating the poor support a reader has experienced on some software product. This letter is about the excellent support I have received on two products advertised in **SOFT SECTOR** and to complement the developers of the software. The software is *KeyMaster* and *DeskMaster*, supplied by A.I. Software.

When I saw an ad in **SOFT SECTOR** for the programs a few months ago, I immediately ordered the software because it promised to do all the "desktop" jobs that *Sidekick* does and more. Further, the phone dialer utility was compatible with the Sanyo MBC-555 (with a video board), which *Sidekick* isn't.

I got the disks from A.I. Software promptly, but soon saw that I had received a version for color monitors, so the menus did not display properly on my monochrome monitor. Also, I had some difficulty in making the phone dialer work with my 1200 baud modem.

I called A.I. Software and described my problems, and got the monochrome versions practically by return mail, along with some advice about how to use the phone dialer.

After using the software for a few weeks, I found some incompatibilities with the "note transfer" utility when using *WordStar* and was still having some trouble with the phone dialer. In addition, there were changes in the activation "hot keys" used by these memory-resident programs that seemed to be needed in order to make the software more compatible with other application programs.

I described all this in a letter to A.I. Software and, within a week, I received some further updates which not only corrected all the incompatibilities that I had noted, but also incorporated all the changes I had recommended. Needless to say, I was very happy about this responsiveness and support.

So, not all software suppliers ignore the customer after making the sale, and I can endorse *DeskMaster* and *KeyMaster* wholeheartedly.

Franklin T. Dodge  
San Antonio, TX

## GETTING CONTROL

Editor:

I've had several readers call me regarding my "DOS Printer Pranks" in the August '86 issue. In particular, some readers have Okidata printers which use ASCII 29 for compressed characters, 31 for elongated characters, and 30 for standard characters. For 29, use CTRL-] (bracket) and for 31 use CTRL- (underline). I have not found a CTRL code for 30, but turning off the printer resets to standard characters.

Fred Blechman  
Canoga Park, CA

## NEW LIFE

Editor:

In the October 1985 issue of **SOFT SECTOR**, Page 28, Jeff Sorensen and Phil MacKenzie have a math game titled, "Development of Life on Your Sanyo." I found this program one of the most interesting and best done of all your programs.

In recent months, I have moved on to an





# Bringing you our very best...

With 48 programs (and still counting) we have the biggest, brightest selection of software available from any company. All our programs run on the Sanyo 550 series; those listed with an asterisk (\*) also run on the Sanyo 700 and 800 series and other IBM-compatible computers.

## For everyone:

- BBS** (\$99.95) - bulletin-board system for your Sanyo.
- Cornerman** (\$39.95) - sidekick for your Sanyo has calendar, notepad, calculator, dialer, even an ASCII table.
- DI** (\$24.95) - advanced directory system sorts all files, even in subdirectories or on hard disks. Locates any file instantly.
- \* **M-Disk** (\$34.95) - classic RAM disk emulator makes your Sanyo super-fast at any disk-addressing operation.
- Mi-Key** (\$34.95) - a key-change program. Type long strings with two or three keystrokes, or try out the Dvorak keyboard.
- \* **Mi-Term** (\$79.95) - terminal communication program helps your Sanyo talk to virtually any other computer system.
- \* **Mousetick** (\$39.95) - trick to make a joystick act like a mouse.
- Printer Helper** (\$29.95) - controller helps Epson printers use their full range of features with your Sanyo.
- \* **Soft Spool** (\$34.95) - software print buffer and spooler keeps your computer working while the printer chugs along.
- Solar Sim** (\$29.95) - educational solar simulation lets you estimate whether solar power is right for your home.
- \* **SuperDirectory** (\$39.95) - cataloger keeps track of all files on all your disks. Sorts, prints disk labels, more.
- Type Right** (\$29.95) - training program makes you a faster, more accurate typist, helps prevent frustrating typos.

## For businessmen:

- \* **Business Agreements** (\$49.95) - attorney-prepared legal forms and contracts simplify your business needs.
- \* **Calendar** (\$24.95) - appointment book brings order to your busy life at work or at home.
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- Graffiti** (\$39.95) - an easy-to-use, basic drawing program.
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- FreezeFrame** (\$39.95) - versatile screen dump utility can be customized to take full advantage of your printer.

## For programmers:

- \* **Drive Timer Plus** (\$24.95) - utility checks disk drives, encodes files and provides menu-driven DOS file commands.
- DS DOS Plus 2.11** (\$49.95) - MS-DOS enhancement package supports 80-track drives, IBM graphics, sorted directories.
- \* **EasyRecord** (\$199.95) - C-programmer's file utility manipulates files of all data types with easy-to-use functions.
- \* **EasyWindow** (\$199.95) - screen display manager makes custom windows easy from C-language programs.
- Graphpac** (\$49.95) - package of graphics routines for Pascal, C and machine language programs.
- Super Zap** (\$49.95) - full-featured disk editor lets you change anything anywhere on a disk. Fix disk errors with ease.
- \* **Transfer** (\$59.95) - data transfer program converts TRS-80 files to MS-DOS files, or vice-versa.

## For gamers:

### Text adventure games:

- \* **Adventure Disk #2 and Adventure Disk #3** (\$34.95 each) - five unique games on each disk.

### Arcade games:

- Cashman** (\$34.95) - take the money and run!
- Darts** (\$34.95) - toss darts with the joystick in eight versions of the classic game of skill.
- Demon Seed** (\$34.95) - first bats, then demons to defeat.
- Major Motion** (\$29.95) - save the weapons van from attack.
- Maz** (\$24.95) - find you way through the maze without being eaten by the prowling cat.
- Mudpies** (\$34.95) - throw them at angry circus clowns, duck the clowns and their Indian clubs.
- Robounce** (\$24.95) - robot aliens move through invisible force fields that deflect your shots.
- Speed Racer** (\$29.95) - win the race - or at least survive!
- Thunder Chief** (\$34.95) - destroy enemy ground forces as you fly the Thunder Chief on increasingly difficult missions.
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IBM clone and wonder if the authors have modified or rewritten the program to work on an IBM-type machine? If so, how could I get a copy?

If you have no contact with the authors, I wonder if you could forward their addresses to me so that I might make this same request of them?

Many thanks.

Carlos E. Milner Jr.  
Aurora, CO

*Editor's Note: We have not received any modifications on this program to date. However, it is quite possible that the authors can write a version for your PC. If so, we will publish the necessary modifications in a future issue.*

## REVIEWING REVIEWS

Editor:

Thank you for your excellent review of our educational software package for the Sanyo 550 series computers (*Smart Set — An Entertaining Educational Tool*), published in your November '86 issue.

There were two errors, however, in the review that we would like to correct. First, the price is \$34.95 plus \$3 S/H, not \$39.95. Second, although the Math-A-Magic portion of the program does require kids to enter a two-digit answer in reverse order, this does *not* reinforce learning of an incorrect answer. Just the opposite is true, in fact. When, for example, a child adds 11+7, she first writes 8 in the ones column, and then 1 in the tens column. Adults do the same thing when adding larger numbers. The *Smart Set* simply reinforces natural learning patterns and is designed to work with, not against, the way children are taught in school.

David C. Snyder, Ph.D.  
MVP Software  
Grand Rapids, MI

Editor:

Please note some concerns over the review about *ZBasic™*, by Jim Pile, in your September '86 issue. Some of the benchmark tests results were misleading or incorrect:

	Review	Actual
Eratos-thenes'		
Sieve	12 sec.	13.7 sec.
Loop	64 sec.	37 sec. (single precision) 64 sec. (double precision)
CountB	23 sec.	0.19 sec. (integer) 23 sec. (double precision)
Bench1	26 sec.	26 sec.

These tests were done on an IBM PC 8088 running at regular clock-speed. As you can see in several cases the results were incorrectly calculated by Mr. Pile. He apparently was setting default variable types to double or single precision which force FOR-NEXT loop variables and other things to also be floating-point.

Mr. Pile's assumption that "LOOP" performed a reasonable number of "everyday" floating-point operations was interesting. Few people use LOG or POWER in their checkbook balancing. Perhaps he looked at our floating-point speed chart in the manual and decided that since LOG and POWER where the slowest functions for BCD Math, he would use them in his benchmark (since *QuickBASIC* uses Binary Math versus *ZBasic's* BCD math, his comparisons are very misleading).

Since almost all speed tests were heavily weighted towards floating-point, his review obscured the fact that *ZBasic* was noticeably faster in virtually every other aspect of programming; including STRING manipulations, disk I/O, code size (*ZBasic* code is about half the size of *QuickBASIC!*), royalty and runtime fees (we don't charge any) and Math Precision.

Had he delved into the differences between BCD and Binary math he would have reported the fact that BCD results in values without the binary rounding error which binary math packages return. In some cases,

a one comes out as .999999! Not so with *ZBasic*. Most businesses prefer this type of math. Microsoft offers BCD for an additional \$500 on its BASIC Compiler. In December we will offer an optional, \$59.95, High Speed Binary Floating-point package that will use the 8087/80287 and which will be at least as fast as *QuickBASIC's* Binary Math. Perhaps a comparison should be done then!

Since his conclusions, in part, were based on the erroneous test results, I believe a correction should be printed in an upcoming magazine.

Michael A. Gariepy  
Zedcor, Inc.  
Tucson, AZ

Editor:

I would like to thank you for the nice review of our card game program, *Doc's Place*.

I thought it a shame, however, that the reviewer wasn't familiar with card playing. This brought about two situations which I feel need further explanation.

First, the reviewer felt that perhaps the computer "cheated" by claiming to have a better hand than the player and that the computer's hand should have been shown. Well, as any card player would have immediately recognized, the computer *does not* have a hand. The player is playing for the best hand he can make. Jacks or better, as the payout screen indicates, pays increasing odds from 1.5 to 1 for a pair, to 50 to 1 for a royal flush.

Second, we believe that our *Blackjack* plays better than any we have seen and that the *Solitaire* game is by far the most exciting and challenging one of the four in *Doc's Place*.

We have taken one of the reviewer's suggestions to heart, and plan to introduce versions for PC Compatibles in the near future.

Thank you for the opportunity to clarify these points.

Jim Dougherty, Jr.  
W. Palm Beach, FL

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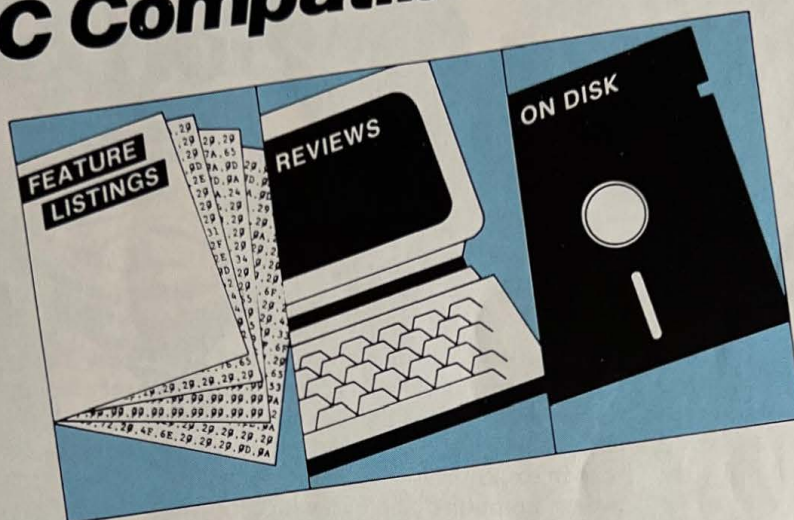
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# SOFT SECTOR

## The PC Compatible Magazine



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And follow they did.

Tandy, Compaq, Leading Edge, Epson, Kaypro and dozens of others: all adhering to the IBM standard, but building on it. Adding to it. Enhancing it. And most importantly, offering it at a more competitive price.

Today, when most people buy a personal computer, these are the machines they choose — the powerful, innovative PC Compatibles. Yet when the owners of these machines go looking for information, all they find are magazines for IBM users.

**Information  
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- A wealth of programs that can be typed in and run on your computer: utilities, home and business applications, games and graphics.

- In-depth reviews of all the latest hardware and software, written to answer your most important questions.
- A spotlight on the best product of the month, chosen by our editors as the most useful, the most innovative, and the one you should seriously consider adding to your collection.

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## A New Direction for Soft Sector

**T**hrough our third anniversary issue, we were pleased to be able to support solely the Sanyo computers. At the time of the founding of **SOFT SECTOR**, we felt that Sanyo, with its 550 and 555 line, plus the new machines on the drawing board, offered an outstanding alternative to the IBM line at an unusually low cost. Our confidence was apparently echoed by the market, because I have never seen a magazine supporting a computer line "take off" quite like **SOFT SECTOR** did.

While today the Tandy 1000 is the leading PC sold in the United States, there was a time when the Sanyo 550/555 held that honor. No, it was not as compatible as many might have wished, but it was compatible enough for the price.

Remarkably, Sanyo achieved that sales position with little advertising, and with what could best be described as a hodge-podge marketing plan. About a year and a half ago, Sanyo undertook to "clean up its sales act," in part by eliminating mail-order sales of their computers. Sanyo was genuinely concerned with the ability of some mail-order dealers to service what they sold. Therefore, Sanyo decided it would not sell to a dealer who was selling Sanyo machines by mail, and they asked us to refuse to accept advertising for mail-order sales for Sanyo computers.

We felt our first duty at **SOFT SECTOR** was to our readers. We analyzed the

situation and, although we did not like the way Sanyo made its request that we refuse such mail-order advertising, we concluded that it would ill-serve a reader to publish advertising for mail-order computers if Sanyo would refuse to support that computer.

**SOFT SECTOR** lost a great deal of advertising revenue as a result of this decision. Sanyo promised it would make up the lost revenue with advertising of its own. Sanyo also implied that **SOFT SECTOR**'s subscription base should increase because Sanyo expected better sales of its computers once its distribution system was cleaned up.

None of this has happened. Sanyo has declined to advertise. I honestly do not believe Sanyo is serious about being a player in this market. Because we have been seeking advertising from them, we have pretty closely monitored their advertising activities elsewhere and find them to be almost nonexistent as compared to Tandy. I do not see how Sanyo can expect to sell computers to anyone when people don't know Sanyo computers exist.

Sanyo's lack of support for this magazine goes even further. After asking for a month or two, we finally received an MBC-990 so we could run a feature article on it. It came with no monitor, no boards, no memory expansion and no cables; and none were ever sent. I contrast this with Tandy, for which **PCM** is published in much the same independent way **SOFT SECTOR** has been published for Sanyo. When a

new Tandy computer is announced, we receive the machine, all the boards available, a monitor, peripherals and in-house software. And, by the way, last month's issue of **PCM** contained four full-color pages of advertising from Tandy. It has had at least two pages since **PCM**'s first issue three years ago!

In converting **SOFT SECTOR** into a "compatibles magazine" we believe we can serve a large number of people. At the same time, we also believe we can continue to serve you. Although the Sanyo 550/555 are not true compatibles by today's definition, we intend to continue to give Sanyo owners and users the kind of support they deserve. Many of the programs and features which we will run will be applicable to the Sanyo 550/555. In many cases, when they are not, we will strive to provide information on how they can be made so. This, it seems to me, represents what might be considered a better level of support than is now available.

Yet, despite the excitement of launching a new direction for **SOFT SECTOR**, I am sad as well. We hope you will wish us well and continue to support **SOFT SECTOR**. Although you will be reading about a number of other computers here, we will continue to support your Sanyo computer specifically. I happen to think this position will be good for both of us. And, as always, I welcome your comments.

— Lonnie Falk  
Publisher



# SPEEDCACHE & EME



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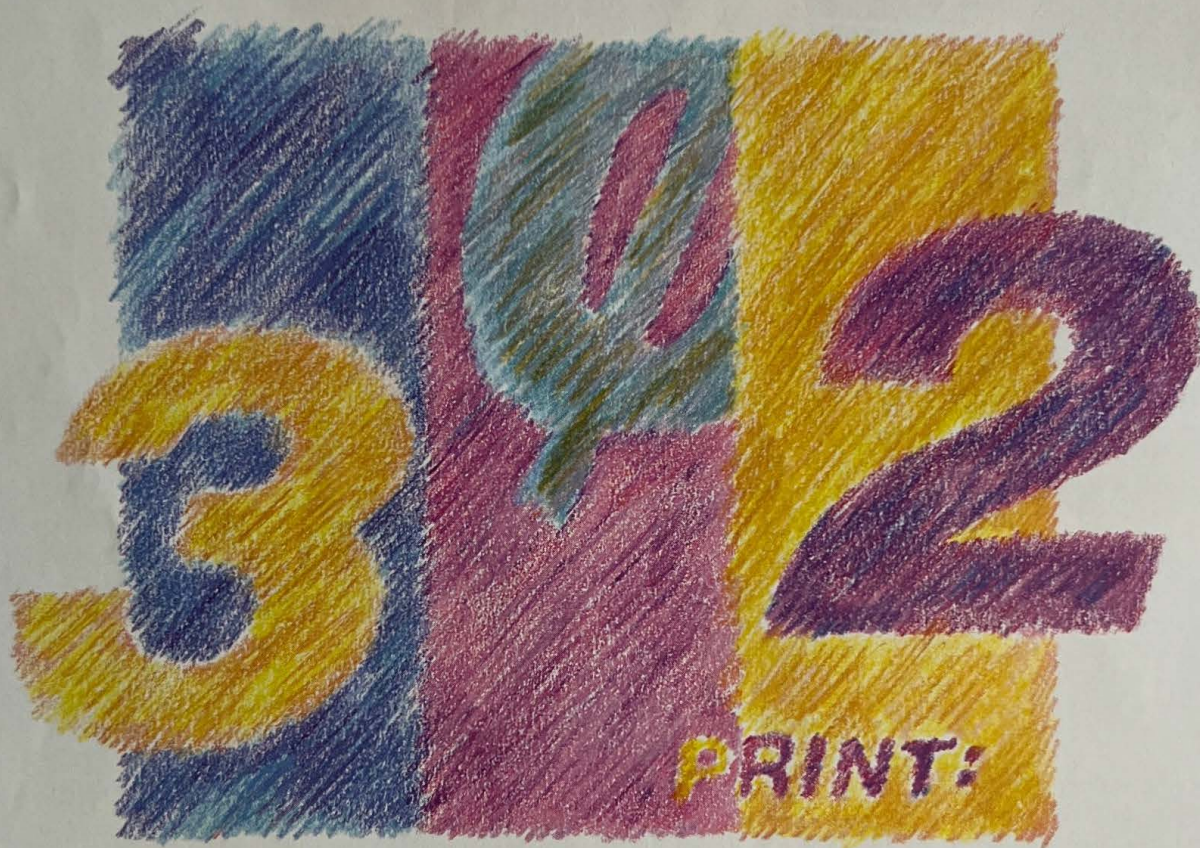
16-bit AT-type computer with any amount of extended memory.



# Numline

## A BASIC Line Renumbering Program

By Leon Boielle



**W**hy use a word processor to write or edit your BASIC program when BASIC already has a perfectly good editor? Some reasons are that word processors

*Leon Boielle owns a furniture manufacturing business in New Zealand. He uses his Sanyo 555 to run an integrated set of programs he has developed to control every aspect of his business. Other interests include yacht design and navigation. He may be contacted at P.O. Box 636, Rotorua, New Zealand.*

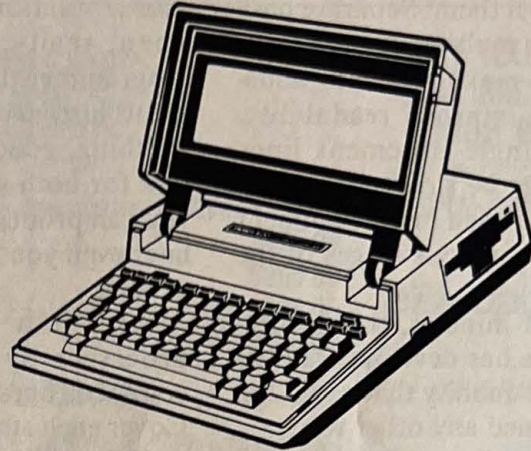
have powerful block, move, copy, find and replace features. They also have the ability to merge standard program modules, subroutines, etc., from disk into your program regardless of their line numbering. Plus, a word processor can forget line numbers completely until the program is ready for testing and debugging. These seem to be good reasons to me.

A novice programmer (tomorrow's expert), whose every line has syntax errors, is far better off using BASIC's built-in editor. However, once serious programs of any length are undertaken, a combination of both is the answer.



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Consider the program we all have written at one time or another that grew, was changed, added to and re-hashed, with subroutines all over the place. It works, but still needs modifying, nicer screen formatting and a few bells and whistles added.

Save it in ASCII format (i.e., SAVE "filename.BAS",A), then load it into your word processor.

Block move all the subroutines into one place and label them. Separate part of some complex multi-statement lines into new lines to make room for additions or just to improve readability. Gather a few single-statement lines together that may be slowing the processing of a loop. Then insert comment lines between the various stages of the program.

In a matter of minutes, that incomprehensible mess has developed a little structure and readability that could not have been obtained any other way.

Save your edited program and then use *Numline* to reorder the jumbled line numbers.

What about GOSUB and GOTO numbers, you ask? Well, NUMLINE.BAS won't reorder those, but if you use *Numline*'s default setting of numbering from 10 in steps of 10, no problem.

Most word processors constantly display the cursor's line number. Men-

tally adding a zero gives you the number that line will have after running *Numline*, so it is not a long task to renumber these as you go, particularly if you provided nice comment labels for each subroutine.

The find-and-replace option is marvelous for reorganizing your variable names (such as replacing all B\$ with CITY\$).

BASIC programming has an unfortunate reputation for being unstructured when, really, it is the mind of the programmer that may be unstructured. BASIC just gives you the freedom to do anything, good or bad. You can structure for both speed and readability, or you can produce a mess that six months later even you would not care to update or alter.

Start your program in your word processor by setting aside all your comment lines first (no line numbers). Cover each stage that the program will go through to reach its goal. Edit these carefully and, when all is in order, start inserting any code. This can reduce programming and debugging time and double the quality of the final product.

*Numline* has one other very different use. Note the high line numbers used. These enable it to be merged with a program you are creating using BASIC's editor without interfering with your

program's line numbers (that is, MERGE "NUMLINE then RUN 10000). And, you can renumber a program module on disk to suit the numbers where you would like it inserted into your program. Specify the start and use spacing of one if necessary. Merge this module into your program, then type DELETE 10000- and *Numline* is gone and the module is neatly added to your program.

One rule to remember is that your library of program modules on disk, or any program to be renumbered or edited with your word processor must be saved in ASCII format. It is also a good idea to use the extension .ASC instead of the default .BAS to distinguish between the formats.

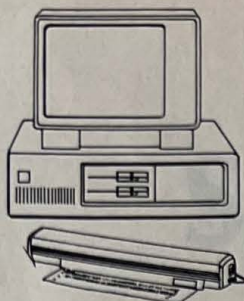
#### COMPATIBILITY PROFILE

- *Numline* runs properly in GW-BASIC on all PC Compatibles, including the Sanyo 550/555 with the Video RAM Board.
- The program may be compiled without change with the Microsoft Quick-BASIC compiler.
- To operate in Sanyo BASIC on the standard Sanyo 555 system, add a space in place of the colon before the LINE INPUT statements in program lines 10730 and 10650.

#### The listing: NUMLINE.BAS

```
10000 CLS:LOCATE 1,32:COLOR 6:WRITE "NUM-LINE.BAS":COLOR 5:LOCATE 3,15
10010 PRINT "For use after editing with "CHR$(34)"Wordstar"CHR$(34)" to: "-
10020 PRINT "Append line numbers to an unnumbered program or re-number after bloc
k move/edit"
10030 LOCATE 6,18:PRINT "Leon Boielle PO Box 636 Rotorua New Zealand"
10040 LOCATE 7,1:PRINT STRING$(80,126)
10050 '
10060 LOCATE 8,1:COLOR 2:PRINT "Do you wish to....":COLOR 7
10070 PRINT TAB(19)"<A>";:COLOR 2
10080 PRINT STRING$(10,46) " ADD numbers to an unnumbered file"
10090 PRINT:COLOR 7
10100 PRINT TAB(19)"<R>";:COLOR 2
10110 PRINT STRING$(10,46) " RENUMBER an already numbered file"
10120 '
10130 LOCATE 15,16:PRINT"BE SURE an incorrect choice will damage your program"
10140 LOCATE 22,10:PRINT"Basic programs to be edited by "TAB(55)" or "":COLOR 5
10150 LOCATE 22,45:WRITE"NUM-LINE":LOCATE 22,59:WRITE "WORDSTAR":COLOR 2
10160 LOCATE 23,1:PRINT"must be saved in ASCII format,ie....":COLOR 5
10170 PRINT"<SAVE ";CHR$(34);"FILENAME.ASC";CHR$(34);",A>":COLOR 2:PRINT" exten
tion optional"
10180 '-----[ Choice of number or renumber ]
10190 Z$=INPUT$(1):IF Z$="R" OR Z$="r" THEN CHANGENUM=-1:CLS:GOTO 10230
10200 IF Z$="A" OR Z$="a" THEN 10210 ELSE 10190
10210 CHANGENUM=0:CLS
10220 '-----[ Get drive and name of input file ]
10230 PRINT "Enter Drive of file to load"
10240 D$=INPUT$(1):IF ASC(D$)>96 THEN D$=CHR$(ASC(D$)-32)
10250 DRV$=D$+":":CLS
10260 PRINT "Enter The Name & Extention of the ASCII Program to edit"
10270 PRINT:PRINT "<ESCAPE> to re start"
10280 PRINT:PRINT DRV$;
10290 S$=INPUT$(1):IF S$=CHR$(27) THEN CLS:INFILE$="":GOTO 10000
10300 IF S$=CHR$(13) THEN 10360
```

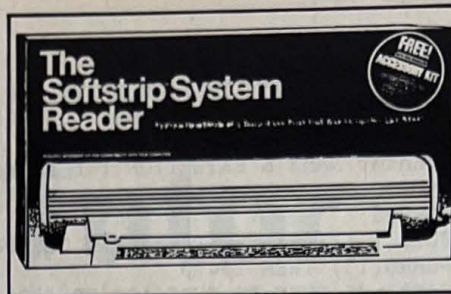




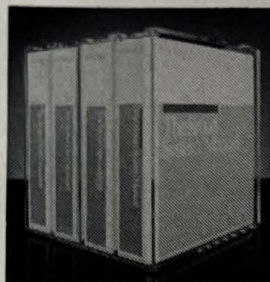
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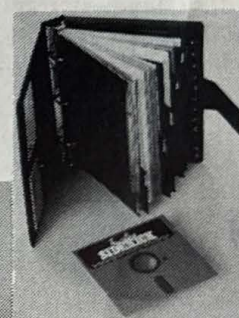
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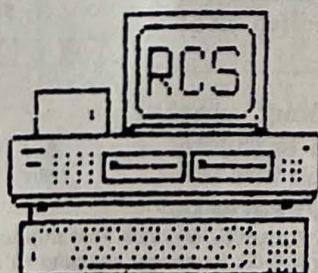


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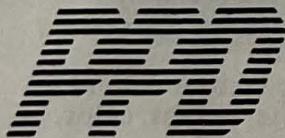


```

10310 IF ASC(S$)>96 THEN S$=CHR$(ASC(S$)-32)
10320 INFILE$=INFILE$+S$
10330 PRINT S$;
10340 GOTO 10290
10350 '-----[ Get drive & name of output file ]
10360 CLS:PRINT "Enter DESTINATION DRIVE for FINISHED file"
10370 D$=INPUT$(1):IF ASC(D$)>96 THEN D$=CHR$(ASC(D$)-32)
10380 DRV2$=D$+" ";
10390 PRINT "Enter NAME & EXTENTION for finished program. If same change drive
or extention"
10400 PRINT DRV2$;
10410 F$=INPUT$(1):IF F$=CHR$(27) THEN CLS:OUTFILE$="":GOTO 10360
10420 IF F$=CHR$(13) THEN 10470
10430 IF ASC(F$)>96 THEN F$=CHR$(ASC(F$)-32)
10440 OUTFILE$=OUTFILE$+F$
10450 PRINT F$;:GOTO 10410
10460 '-----[ Ensure Infile & Outfile names differant ]
10470 IF DRV$+INFILE$=DRV2$+OUTFILE$ THEN CLS:LOCATE 10,1:PRINT"OUTPUT FILE SAME
NAME AS INPUT FILE":GOTO 10490
10480 GOTO 10510
10490 PRINT"PLEASE CHANGE DRIVE,NAME, OR EXTENTION FOR OUTPUT FILE":GOTO 10360
10500 '-----[ Option to change numbering default ]
10510 S=10:INDEX=0:PRINT:PRINT
10520 PRINT "DO YOU WISH TO CHANGE DEFAULT OF START LINE=10 STEP=10..Y/N "
10530 Z$=INPUT$(1):IF Z$="Y"OR Z$="y" THEN 10560
10540 IF Z$="N" OR Z$="n" THEN 10620 ELSE 10530
10550 '
10560 CLS:INPUT "ENTER REQUIRED STARTLINE NUMBER ";INDEX
10570 CLS:INPUT "ENTER REQUIRED STEP ie 1 TO 100 ";S
10580 CLS:PRINT "BEGINING ="INDEX:PRINT " STEP ="S TAB(40)"IS THIS OK...Y/N"
10590 Z$=INPUT$(1):IF Z$="N" OR Z$="n" THEN 10510
10600 INDEX=INDEX-S:IF INDEX<0 THEN INDEX=0
10610 '
10620 IF CHANGENUM THEN 10710 ELSE 10640
10630 '-----[ Add numbers & refile ]
10640 OPEN "I",#1,DRV$+INFILE$:OPEN "O",#2,DRV2$+OUTFILE$
10650 WHILE NOT EOF(1):LINE INPUT #1,A$
10660 INDEX=INDEX+S:LOCATE 12,1:PRINT INDEX;
10670 PRINT #2,MID$(STR$(INDEX),2) ; " ";A$
10680 WEND
10690 CLOSE:END
10700 '-----[ Change numbers & refile ]
10710 DEF FNA$(X$)=MID$(X$,INSTR(X$," "))
10720 OPEN "I",#1,DRV$+INFILE$:OPEN "O",#2,DRV2$+OUTFILE$
10730 WHILE NOT EOF(1):LINE INPUT #1,A$
10740 INDEX=INDEX+S:LOCATE 12,1:PRINT INDEX;
10750 PRINT #2,MID$(STR$(INDEX+B),2);FNA$(A$)
10760 WEND
10770 CLOSE:END

```

SS



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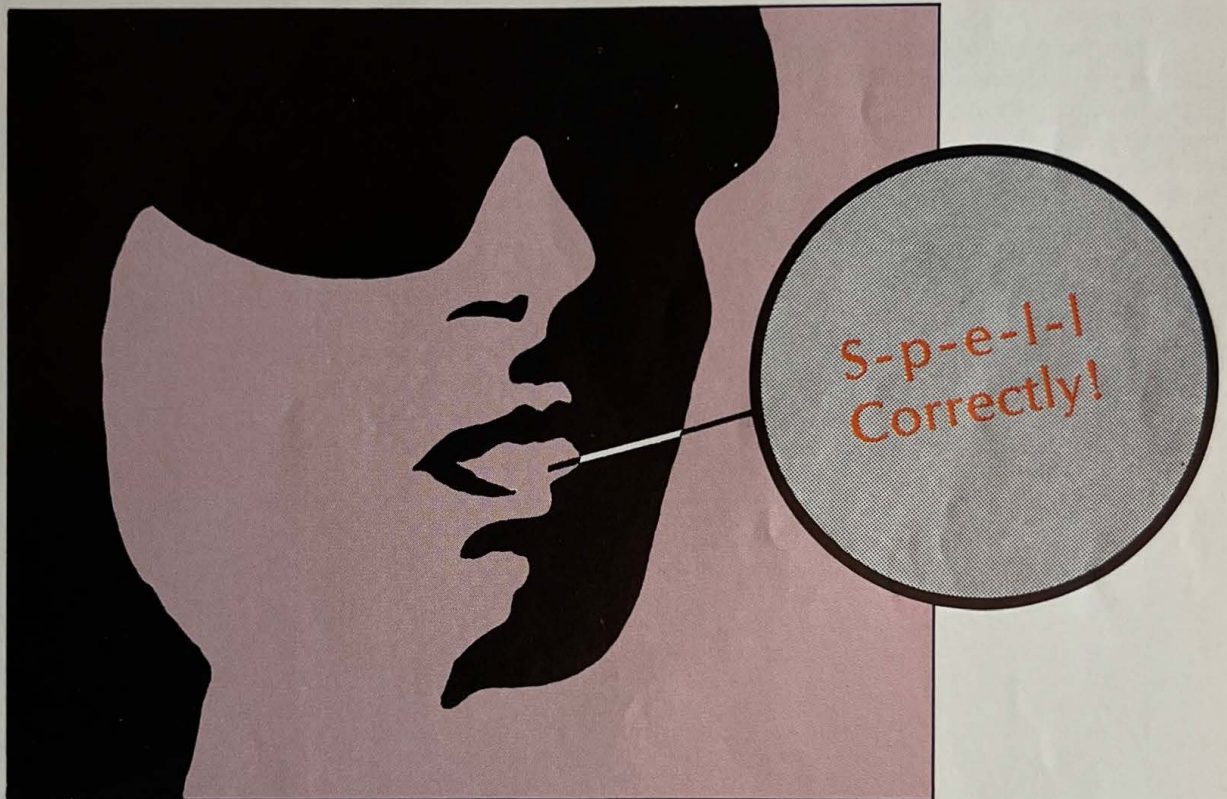
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# Spelling Tutor

By Mike Salisbury



**W**ith a current decline in the spelling ability among school children nationally, *Spelling Tutor* should prove very useful for students working to improve their deficiencies in this area. It

---

*Mike Salisbury works for General Motors as a quality control technician and does free-lance consulting as an electronics technician. He may be contacted at 6603 Old Niagara Road, Lockport, NY 14094, 716-434-3726; and on Delphi, username MISAL.*

employs an interesting concept in the way it presents the words that must be spelled correctly. In a spelling quiz, the words are presented orally. Other than making flash cards for every word, there is no visual aspect using the oral method. The method used in the program accomplishes three objectives:

1. The student is presented with a visual image
2. Concentration is focused on the words (like studying)
3. The answer must be typed in (again focusing concentration).

When a word is misspelled, the student is given the correct spelling. Error association is immediate.

In most cases, spelling errors are







```

310 PRINT"of course, will be incorrect.";
320 PRINT" Try to make these incorrect spellings ";
330 PRINT"close to the phonetic correct spelling.";
340 PRINT
350 PRINT" Recognition and actually typing in the ";
360 PRINT"correct spelling will be of benefit to";
370 PRINT"the student.";:PRINT
380 PRINT" You may enter up to 25, three-word sets.";
390 PRINT"Be sure one is spelled correctly and";
400 PRINT"labeled as the correct spelling.":PRINT
410 PRINT"Use 'LOWERCASE' unless the word requires";
420 PRINT"the first letter be a capital.";:PRINT:PRINT:PRINT:PRINT
430 GOSUB 1440
440 INPUT RM$
450 CLS:GOSUB 1490
460 LOCATE 1,10:PRINT"*** Word List Input ***";
470 FOR X=1 TO 25:LOCATE 5,2:PRINT"Word #";X
480 LOCATE 24,11:PRINT"Press <RETURN> to quit";
490 LOCATE 11,2:INPUT "Enter word # 1:";A$(X):IF A$(X)="" THEN 610
500 REM
510 REM          ** CHECK FOR UPPERCASE **
520 REM
530 IF RIGHT$(A$(X),1) < CHR$(97) OR RIGHT$(A$(X),1) > CHR$(122) THEN GOSUB 1610
:GOTO 450
540 LOCATE 13,2:INPUT "Enter word # 2:";B$(X)
550 LOCATE 15,2:INPUT "Enter word # 3:";C$(X)
560 LOCATE 18,2:PRINT"Which word is correct, 1,2, or 3";:INPUT B
570 IF B<1 OR B>3 THEN BEEP:GOTO 560
580 IF B =1 THEN D$(X)=A$(X) ELSE IF B=2 THEN D$(X)=B$(X) ELSE IF B=3 THEN D$(X)
=C$(X)
590 LOCATE 11,19:PRINT SPACE$(21);:LOCATE 13,19:PRINT SPACE$(21);:LOCATE 15,19:
PRINT SPACE$(21);:LOCATE 18,36:PRINT " ";:PLAY "o2 l4 a c"
600 NEXT
610 LOCATE 24,6:PRINT" Want to save this file now";:INPUT SF$
620 IF LEFT$(SF$,1)="y" OR LEFT$(SF$,1)="Y" THEN 660 ELSE 120
630 REM
640 REM ***** SAVE ROUTINE *****
650 REM
660 CLS:GOSUB 1370
670 LOCATE 5,11:PRINT "Word List File Save";
680 LOCATE 6,11:PRINT"^^^^^^^^^^^^^^^^^^^^";
690 LOCATE 9,1:PRINT "Filename (8 characters max.)";:LOCATE 11,1:PRINT"--> ";:IN
PUT FL$
700 IF LEN(FL$)>8 THEN LOCATE 23,5:BEEP:PRINT"Too many characters, try again";:L
OCATE 11,5:PRINT SPACE$(17):GOTO 690
710 IF FL$="" THEN CLS:GOTO 160
720 OPEN "O",#1,FL$+".spl"
730 FOR X=1 TO 25
740 WRITE #1, A$(X),B$(X),C$(X),D$(X),M$(X)
750 NEXT:CLOSE
760 LOCATE 15,8:PRINT "> "FL$ " < Saved To Disk.";
770 REM
780 REM ***** LOAD ROUTINE *****
790 REM
800 GOSUB 1440:INPUT RM$:GOTO 120
810 CLS:LOCATE 2,13:PRINT "Load A Word File";
820 LOCATE 3,13:PRINT"^^^^^^^^^^^^^^^^^^^^";
830 LOCATE 6,1:PRINT"Files available:";
840 LOCATE 8,1:PRINT"-----";
850 ON ERROR GOTO 1560
860 LOCATE 10,1:FILES "*.spl"
870 LOCATE 22,2:PRINT"Type in your choice (8 characters max)";
880 LOCATE 24,12:PRINT"--> ";:INPUT FL$
890 IF FL$="" THEN 120
900 OPEN "I",#1,FL$+".spl"
910 FOR X=1 TO 25
920 INPUT #1,A$(X),B$(X),C$(X),D$(X),M$(X)
930 NEXT
940 CLOSE
950 CLS:LOCATE 14,14:PRINT FL$ " Loaded"
960 LOCATE 23,9:PRINT"Want to start the Quiz";:INPUT Z$:IF LEFT$(Z$,1)="y"OR LEF
T$(Z$,1)="Y" THEN 1000 ELSE 120
970 REM
980 REM ***** QUIZ ROUTINE *****
990 REM
1000 CLS:GOSUB 1490

```



```

110 LOCATE 2,1:PRINT"Your Name ";:INPUT NA$
120 LOCATE 4,1:PRINT"Do you have your PRINTER on";:INPUT Z$:IF LEFT$(Z$,1)="Y"
130 LEFT$(Z$,1)="y" THEN FL=1 ELSE FL=0
140 LOCATE 2,1:PRINT SPACES$(39);:LOCATE 4,1:PRINT SPACES$(39);:LOCATE 2,2:PRINT
150 "NA$" here is your Quiz";
160 IF FL=1 THEN LPRINT NA$;"'s Word List ---> ";FL$;STRING$(80,"*");
170 FOR X=1 TO 25
180 IF A$(1)="" THEN BEEP:LOCATE 24,6:PRINT "There is no DATAFILE in memory";:F
190 DELAY =1 TO 5000:NEXT DELAY:GOTO 120
200 LOCATE 6,2:PRINT "Word #";X
210 LOCATE 7,2:PRINT "-----";
220 LOCATE 10,9:PRINT A$(X):LOCATE 12,9:PRINT B$(X):LOCATE 14,9:PRINT C$(X)
230 IF A$(X)="" THEN 1190
240 LOCATE 18,4:PRINT "Type in the correctly spelled word";
250 LOCATE 20,2:PRINT "---> ";:INPUT AN$
260 IF RIGHT$(AN$,1) < CHR$(97) OR RIGHT$(AN$,1) > CHR$(122) THEN GOSUB 1610:GO
270 TO 1000
280 IF FL=1 AND AN$ <> D$(X) THEN LPRINT "You missed ---> " D$(X)
290 IF AN$ <> D$(X) THEN M$(X)=D$(X)
300 IF AN$=D$(X) THEN 1420 ELSE 1430
310 LOCATE 6,9:PRINT " ";:LOCATE 10,9:PRINT SPACES$(20);:LOCATE 12,9:PRINT SPACES
320 (20);:LOCATE 14,9:PRINT SPACES$(20);:LOCATE 20,6:PRINT SPACES$(20);
330 NEXT X
340 TOTAL=WR+CO
350 REM
360 REM ***** TOTAL CORRECT *****
370 REM
380 CLS:GOSUB 1370
390 CLS:PRINT " You got "CO" correct out of "TOTAL;:PRINT:PRINT" You need to
400 study the following words:";:PRINT:PRINT
410 FOR X=1 TO 25
420 IF M$(X) >"" THEN PRINT SPACES$(15); M$(X)
430 NEXT X
440 IF FL=1 THEN LPRINT STRING$(80,"*");
450 GOSUB 1440:INPUT RM$
460 REM
470 REM ** CLEAR M$ **
480 REM
490 FOR X=1 TO 25:M$(X)="" :NEXT X:GOTO 120
500 REM
510 REM ***** SCREEN BORDER ROUTINE *****
520 REM
530 LOCATE 2,1:PRINT STRING$(40,"*");
540 LOCATE 25,1:PRINT STRING$(40,"*");:RETURN
550 REM
560 REM ***** RIGHT AND WRONG ROUTINE *****
570 REM
580 CO=CO+1:LOCATE 24,2:PRINT SPACES$(36);:BEEP:LOCATE 24,17:PRINT "CORRECT!";:G
590 OTO 1170
600 WR=WR+1:LOCATE 24,5:PRINT SPACES$(35);:PLAY "o2 14 e e":LOCATE 24,5:PRINT"In
610 correct, it is > ";D$(X);" <";:GOTO 1170
620 LOCATE 24,7:PRINT"Press <RETURN> to continue";:RETURN
630 CLS:SYSTEM
640 REM
650 REM ***** DRAW BOX ROUTINE *****
660 REM
670 LOCATE 8,1:PRINT CHR$(201):LOCATE 8,2:FOR SCR=1 TO 38:PRINT CHR$(205);:NEXT
680 SCR:LOCATE 8,40:PRINT CHR$(187)
690 FOR SCR=9 TO 21:LOCATE SCR,1:PRINT CHR$(186);:FOR SP=1 TO 38:PRINT CHR$(32)
700 ;:NEXT SP:PRINT CHR$(186):NEXT SCR
710 LOCATE 22,1:PRINT CHR$(200):LOCATE 22,2:FOR SCR=1 TO 38:PRINT CHR$(205);:NE
720 XT SCR:LOCATE 22,40:PRINT CHR$(188)
730 RETURN
740 REM
750 REM ***** ERROR ROUTINES *****
760 REM
770 IF (ERR=53) AND (ERL=900) THEN LOCATE 16,6:PRINT"That file is not on this d
780 isk!";:PLAY "o2 14 e e":FOR DELAY=1 TO 3000:NEXT DELAY:LOCATE 16,6:PRINT SPACES(
790 39):RESUME 810
800 IF (ERR=53) AND (ERL=860) THEN LOCATE 16,6:PRINT"NO DATAFILES FOR THIS PROG
810 RAM , RESTART!";:PLAY "o2 14 e e":LOCATE 20,12:PRINT"Press CTRL-BREAK";:FOR DELA
820 Y=1 TO 3000:NEXT DELAY:LOCATE 16,6:PRINT SPACES$(40):RESUME 810
830 REM
840 REM ***** UPPERCASE WARNING/WIPE *****
850 REM
860 LOCATE 20,6:PRINT " ***** Use LOWERCASE! *****";:PLAY "o2 14 e e":FOR DELA
870 Y = 1 TO 3000:NEXT DELAY:LOCATE 20,5:PRINT SPACES$(23);:RETURN

```



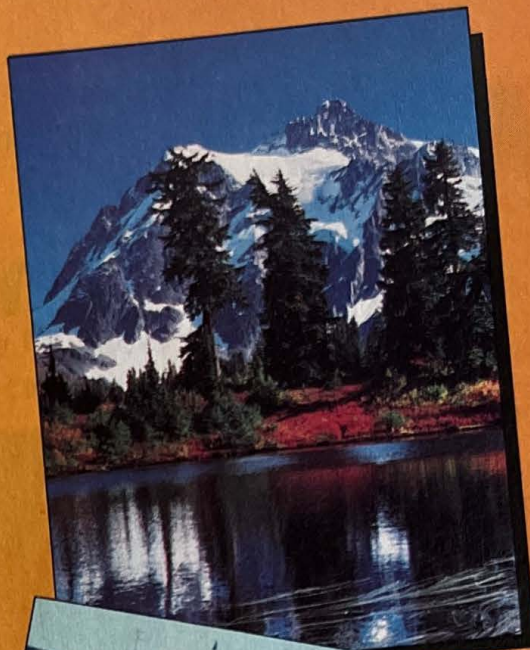
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**W**ith all the hootin' and hollerin' about 80286 systems, accelerator boards and the next-generation 80386 systems on the way, one quickly forgets that a lot of would-be PC users are just as well off with a very basic PC-compatible system that gives good value for a reasonable price. Victor Technologies' VPC II is just such a machine.

The VPC II, at first glance, looks like a rather nondescript PC Compatible, with only five slots instead of the now-typical eight. (A small one, too; the VPC II is only 16½ inches wide and 15¼ inches deep.) However, a second glance will tell you there is added value here; the VPC II comes with a built-in printer port and an RS-232 serial port. This means that at least one, and possibly two, of those slots will not be tied up for your printer and modem (assuming you use an external modem).

The VPC II therefore can be expanded almost as far as the usual eight-slot, XT-compatible box, which normally requires cards for printer and modem ports. Unlike some computers, such as the Tandy 1000 series, the VPC II has no built-in video display circuitry; as is customary with other PC Compatibles, you must add the display adapter and monitor of your choice to complete the system.

Coming back around to the front of the computer, we find that the keyboard cord plugs in on the right side of the system unit instead of the back. The keyboard itself is a good one, very similar to the AT-type keyboard (except that it is PC compatible and can be replaced by other PC-compatible keyboards), and responds nicely to a light touch. It does not have the "Selectric click" that has been added to IBM and some other keyboards, so some typists who are

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*Ed Ellers, SOFT SECTOR's Technical Editor, is a self-confessed electronics fanatic whose other interests include science fiction.*

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accustomed to IBM keyboards may not like it, but others may prefer Victor's keyboard.

Specially labeled keyboards are available for Swedish, German and French languages, as well as one for the United Kingdom that puts the British pound sign on the '3' key where British typists expect it to be. There are keyboard files for Denmark, Finland, France, Germany, Italy, Mexico, Norway, Spain, Sweden and the UK, which specify not only things like the keyboard layout, but also the customary currency symbol and decimal point for each country.

On the front of the computer are the disk drives (Drive A is on the

right side of the front panel, as is Drive B in a two-drive system). You will also find a reset button that can be used to restart the machine in case of a full-blown program crash without having to switch the computer off.

Inside the VPC II are the five slots mentioned before; two of these have a special second connector that is used by certain 16-bit boards sold by Victor. The fifth slot, which is occupied by the hard disk controller when one is installed, can apparently accommodate a number of the hard disk cards on the market these days.

The VPC II comes with a full 640K of memory on the



## and V286

By Ed Ellers  
Soft Sector Technical Editor



motherboard, so memory boards will not be needed in most applications. Oddly enough, the processor is an 8086 instead of the usual 8088, which explains why the computer ran *The Norton Utilities' SysInfo* speed check at 1.1 times the speed of the IBM PC. As usual there is a socket for an 8087 math coprocessor. (Victor has an 80286 accelerator board available for the VPC II, but it was not tested by SOFT SECTOR.)

The optional 20-megabyte hard disk ran quietly and reasonably fast (a CORETEST speed rating of 1.44). The one-drive VPC II can accept half-height hard disk drives and hard disk cards without

problems, but the model with two floppy drives for some reason is equipped with a smaller power supply and may not be able to power hard disk drives well. If you need two floppy disk drives, I'd suggest buying a single-drive VPC II and installing a second drive to get the larger (112-watt) power supply.

The VPC II comes with MS-DOS 3.1, GW-BASIC and a diagnostics disk, but no applications software is bundled with it. Victor has wisely arranged for Xerox Americare to service its computers, so service should not be a problem during or after the 90-day limited warranty.

The VPC II is priced at \$1,095 for the single-drive model, \$1,295 for the two-drive version and \$1,995 for the hard disk unit. These prices are in line with other name-brand PC Compatibles, but are somewhat higher than some of the no-name machines; the price difference is made up, at least to my way of thinking, by the added features and nationwide service facilities. Victor definitely has a winner in its VPC II.

**N**ow that the focus in the PC Compatible world has shifted toward the higher-performance 80286 microprocessor, AT-compatible systems are becoming popular not only with "power users" but with some who just want to have the "best" computer around. In many situations this is a lot like the car nut who pays extra for a turbocharger knowing full well that the car won't be driven faster than 55 miles per hour, but there are quite a few people who can reap the benefits of "286" power. The Victor V286 is one of many true AT-compatible computers on the market, and isn't a bad one at all.

The V286 doesn't seem too different from the IBM "standard" when you first look at it. The disk drive, hard disk, power lights and key lock are there in all the usual places. The power switch is mounted on the right side toward the rear of the computer, just where you would expect it to be. The keyboard uses the standard IBM PC AT layout and has a good touch (it's the same as the keyboard of the VPC II, except that the V286 keyboard uses AT scan codes and has the AT's SYS REQ key).

The V286 does have some added attributes though. First of all, it has a built-in printer port and an RS-232 serial port, so you don't have to waste slots (and money) by installing cards for these. (The V286 uses the AT-style, nine-pin serial port connector, not the standard 25-pin, even though there is plenty of space on the rear panel for the standard connector.) Also, the floppy disk controller is on the motherboard, so you don't waste a slot there either.

The floppy drive is the 1.2 megabyte,



high-density type used in the IBM AT and most AT Compatibles, which in my opinion is best suited to backing up hard disks (since it requires less than a third of the number of diskettes needed to back up the same hard disk on 360K floppies). High-density drives don't work well if you need to save or alter a file on an existing 360K diskette, because the narrower tracks recorded by a 1.2-megabyte drive don't completely overwrite the existing tracks.

If you need to move files from the V286 to a PC Compatible, you can format a blank disk in 360K format on the V286 (using the command `FORMAT A: /4`) and copy the needed files onto it, but if you intend to do a lot of this sort of swapping, you might want to install a standard 360K drive as Drive B. This is quite simple on the V286, as the drive mounting bracket is attached with two screws and lifts right out with the drive(s) in place; all you need do is mount the second drive on the bracket,

drop the bracket back in and plug in the cables.

The hard disk version comes with a 20-megabyte drive that isn't particularly fast; CORE International's CORE-TEST 2.7 rated it at 1.64, somewhat slower than an IBM AT's hard disk but not bad. A second fixed hard disk (one of a number of standard half-height drives will work) can be installed even more easily than a floppy drive.

The V286's other plus features are an 8-MHz clock speed (it can be switched down to 6 MHz to operate certain boards and programs that don't get along well at 8 MHz), and sockets for a full 1024K of RAM. The V286 comes standard with 512K, and you can add the rest by installing eighteen 41256-15 (150 nanosecond) dynamic RAM chips; a set of nine will bring it up to the MS-DOS limit of 640K. The additional 384K in a one-megabyte machine can't be used as system memory under MS-DOS, but it should be possible to use

it as expanded memory using an EMS emulator utility that supports the Lotus/Intel/Microsoft expanded memory specification.

The Norton Utilities' SysInfo program returned a speed rating of 7.7 at 8 MHz, quite a bit slower than the Tandy 3000 series and Sanyo's MBC-990 (6-MHz speed was 5.7). A Victor support engineer explained that the V286 BIOS was designed more for compatibility than for speed, and stated that the V286 typically runs as fast as the new 8-MHz IBM PC AT. This is still almost eight times as fast as a typical PC XT Compatible which rates 1.0.

As with the VPC II, Victor has made service arrangements with Xerox Americare for the V286, so warranty service won't be a problem. With all this in mind (including a quite reasonable \$2,195 list price — \$2,995 for the hard disk version) the V286 deserves a good hard look from any would-be PC AT user.

SS

#### SOFT SECTOR Box Score: Victor VPC II

Type: PC XT Compatible (8086 processor)  
 Keyboard: Very similar to AT-style keyboards, 83 keys  
 RAM: 640K on motherboard  
 Option slots: 5 (two have special 16-bit bus)  
 Diskette drive: One 360K (controller on motherboard)  
                     second 360K drive optional without hard disk  
 Hard disk: One 20-megabyte, optional (controller takes one slot)  
 Display: Not included  
 On-board extras: Printer port  
                     Serial port  
 Software included: MS-DOS 3.1, GW-BASIC, diagnostics  
 CPU speed rating: 1.1 at 4.77 MHz  
                     (measured with Norton Utilities)  
 Hard disk speed rating: 1.44  
                     (measured with CORETEST 2.7)  
 List price: \$1,095 with one floppy drive  
             \$1,295 with two floppy drives  
             \$1,995 with one floppy drive and hard disk  
 Warranty: Limited, 90 days  
             Servicing handled by Xerox Americare service centers  
 Contact: Victor Technologies  
           380 El Pueblo Road  
           Scotts Valley, CA 95066-0001  
           (408) 438-6680

#### SOFT SECTOR Box Score: Victor V286

Type: PC AT-compatible desktop system  
 Keyboard: AT style, 84 keys  
 RAM: 512K standard, 1024K possible on motherboard  
 Option slots: 8 (six 16-bit AT type, two 8-bit PC type)  
 Diskette drive: 1.2-megabyte high density Drive A  
                     Optional 360K or 1.2-Mb Drive B  
                     Controller on motherboard  
 Hard disk: 20-megabyte Drive C  
             Optional half-height Drive C (several types can be  
             used) Controller takes one slot  
 Display: Not included  
 On-board extras: Printer port  
                     Serial port  
 Software included: MS-DOS 3.1, GW-BASIC, diagnostics  
 CPU speed rating: 5.7 at 6 MHz, 7.7 at 8 MHz  
                     (measured with Norton Utilities)  
 Hard disk speed rating: 1.64  
                     (measured with CORETEST 2.7)  
 List price: \$2,195 with one floppy drive  
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# Thoughts on BASIC

By James Pile

**T**he two most popular computer languages for personal computers are BASIC and PASCAL, with BASIC by far the most popular of the two. Both were developed in an academic environment, and both were developed for the primary purpose of teaching people how to program a computer. Early machines were programmed byte by byte, and the early computer pioneers recognized that to make full use of a computer, it would be necessary to develop easier methods of communication. All computer languages are the result of that never-ending search.

BASIC was developed at Dartmouth College by John Kemeny and Thomas Kurtz, and was the first interactive language. Before BASIC, one had to write the coding, then compile it, link it and run it as a batch job. If there were errors — and there usually were — the only thing to do was locate them and start the whole process over again. BASIC provided a means of more direct communication with the computer. Using BASIC, one could type in a line or two, test it and then continue with the program. It was a big step forward and, of course, it is that very characteristic of BASIC that keeps it the popular language it is today.

PASCAL, named after the French mathematician, was developed by Dr.

*Jim Pile is an instrumentation engineer with Brown & Williamson Tobacco Corp. He has been working with a variety of personal computers for two years and may be contacted at 9213 Ponder Lane, Louisville, KY 40272.*

Niklaus Wirth with a different goal in mind — he was looking for a language that could be taught in a logical, straightforward manner and be debugged easily without ever using a computer. PASCAL is structured so an instructor can grade the work of students with very limited access to a computer.

BASIC is, by definition, an unstructured language. That doesn't mean you can't write logical, structured programs in BASIC. It just means that you don't really have to. PASCAL, on the other hand, is very structured. It forces you to follow its structure. Your program won't run if you don't.

Another big difference between the two is that BASIC is usually an interpreted language, while PASCAL is compiled. We will get into the difference between interpreters and compilers in a later column. For now, the big difference is that an interpreted language is interactive and a compiled language is not. (No letters on this subject please; I know that's not always the case, but that discussion, too, will come later.)

I am now going to express an opinion — jump on this one if you like — BASIC is the most versatile, most forgiving, and among the most powerful computer languages available today. It comes in various dialects, many of them specific to certain applications, such as business, mathematics or graphics. You can choose from many versions, both interpreted and compiled, at a very reasonable cost. And best of all, the most popular version, GW-BASIC or BASICA, comes right on your MS-DOS disk at no extra charge at all.

The primary purpose of this column



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will be to provide BASIC programming information that is either not included in the manual, or is in the manual, but difficult to understand. The latter is much more likely, since the manual does cover all the instructions available. The problem is, most of us have some trouble using the full power available to BASIC programmers. That's a result of one of the factors I mentioned earlier — BASIC is a very forgiving language. There are many ways to accomplish a desired goal when programming and most of us tend to use the instructions we are most familiar with. It speaks well for BASIC that most programs can be written using only a small subset of the language.

I got a taste of that during the past year. I had written very few programs that called for much disk access and when I did use it, I always used sequential files. Earlier this year, I ran into a situation that definitely required the use of random files. When I went to the BASIC manual, I found the information on random files to be obscure and confusing. There were examples, but none that came close to my needs. I figured it out, of course — mostly through experimentation — and now random files are almost second nature. I find it hard to believe that only a few months ago, I had so much trouble figuring out how to apply them to my applications.

That's the type of thing this column will address. I would like to have something in this column every month for both the novice and the experienced user, and I invite comments and hints concerning programming in BASIC. I am also interested in questions that may be of general interest to anyone learning BASIC or involved in programming in BASIC. Those of you with experience have developed, over the years, little tricks to make better use of BASIC. If you wish to send some of your ideas or comments to **SOFT SECTOR**, I will use what I can in this column. I regret that time will not allow a personal reply to each letter. But that doesn't mean they are not appreciated.

If you have just purchased your first MS-DOS, PC-compatible computer, there are a few things about BASIC you might need to know. First of all, the name for the interpreter might be different on your computer than on some others. It can be a bit confusing at first, but it really doesn't make any difference — they are all Microsoft BASIC.

An example of what I'm talking about is that on the AT&T and Corona computers, BASIC is called GW-BASIC; on the Compaq and IBM PCs, it is **BASICA**. All you really have to do is determine the name used by your version of DOS. In most cases, there is a **BASIC.COM** file that serves as a loader for the BASIC interpreter. If yours is set up that way, then all you need to do is type in BASIC to load and run the interpreter.

The IBM comes with three versions of BASIC. A big part of IBM BASIC is in ROM. The BASIC files on the DOS disk are extensions to the ROM BASIC. The ROM BASIC alone is of no value at all. If you own an IBM and wish to play around with the ROM BASIC, just turn the computer on without a DOS disk. When the BIOS finds nothing to load, ROM BASIC will load as a default. Since there is no DOS present, it is a very limited BASIC.

There is also **BASIC.COM** on the disk. This is, or at least has been in the past, a somewhat limited version of BASIC. The other, and most useful, is **BASICA.COM**. This one has it all, and I see little reason to use any of the other versions. The **BASIC.COM** file is shorter than **BASICA** and I suppose was meant to be used on systems lacking in memory. That situation seldom exists nowadays.

Some of the compatibles also use the two filenames of **BASIC.COM** and **BASICA.COM**, but usually all they do is load another file named **BASICA.EXE**, **GW-BASIC.EXE**, or just **BASIC.EXE**. The only reason for using the two names, so far as I can see, is to maintain a high degree of compatibility with some of the older software which may call BASIC under the name of **BASICA** or **BASIC**. I have personally left my Compaq with only **BASIC** as the loader, which calls up **BASICA.EXE**.

One potential problem, and one I have been questioned about often, is that some programs that use BASIC have IBM BASIC installed on the disk. These disks usually have an **AUTOEXEC.BAT** file that loads BASIC, then runs the application software. Attempts to load IBM BASIC on any computer other than an IBM are doomed to failure. Since much of IBM BASIC is in ROM and the disk file is just an extension, compatibles have no way to make use of the IBM file.

If you should have that problem, check to see if the disk is copy protected. If not, check the size of your BASIC files to make sure you have room for them



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on the disk and copy your version of BASIC over the IBM version. If you can't do that, load your BASIC first, then call the files up from the program disk. If it's copy protected, you may be out of luck.

Another thing to watch for is those few programs that are IBM specific. They will not run on any other computer. These programs are normally published by IBM. If you are interested in a particular program, ask the salesman to run it on a non-IBM computer before you buy. Keep up with **SOFT SECTOR**, too. Programs that won't run on compatibles are sure to be uncovered by the staff or the readers and reported as quickly as possible. If you run across software that won't run on your computer, please let **SOFT SECTOR** know so we can pass the information along to others.

An excellent way to keep up with the world of compatibles (including IBM) is to join us on the MS-DOS SIG on Delphi. There are many knowledgeable people to be found in the Conference and Forum areas, and there is also a large database of public domain software available for downloading. Some

of the public domain software is every bit as good as commercial products. Some of it isn't even available on the market. Delphi is certainly worth looking into. I think you will find it invaluable.

This column can also serve as a news source about software and hardware that affect the BASIC programmer. News, not reviews; full scale reviews are run elsewhere in the magazine. I will comment only on those packages that I have personally used. I will tell you which computers I have run them on, but I can't possibly assure you that they will work on everything, or that they will do everything you may want. In that spirit, I offer the following.

For those among you who are already experienced BASIC programmers, if you haven't already done so, you owe it to yourself to take a good look at Microsoft's *QuickBASIC* Version 2.00. This is a fantastic compiler with a built-in editor. And it is very compatible with most of your existing programs written in *BASICA* or *QuickBASIC* Version 1. I have run *QuickBASIC* 2.00 on many PC Compatibles, and it ran well on them all.

Another very nice package I ran across recently is *Mach 2* from Micro-Help, Inc. Among many other things, *Mach 2* includes a routine that allows BASIC to print to the screen like an assembly language program. I used it in a program that collects data in real time and puts quite a bit of information on the screen. Before I ran across *Mach 2*, I barely had time to finish one screen before the next one began. That left little time for anything else. It was a real problem. Using *Mach 2*, the screen seems to just flash into existence.

I ran *Mach 2* on the computers previously mentioned with no problems. Since it is a hardware intensive program, I suggest you check with Micro-Help about your particular computer. My feeling is that it should run on most, but it would be wise to check with the company.

I'm all out of room for this month. Next time we'll go into more detail about the use of Microsoft *BASICA*, or *GW-BASIC*, or whatever. We will also discuss the differences between interpreters and compilers.

I wish everybody a very happy holiday season.

SS

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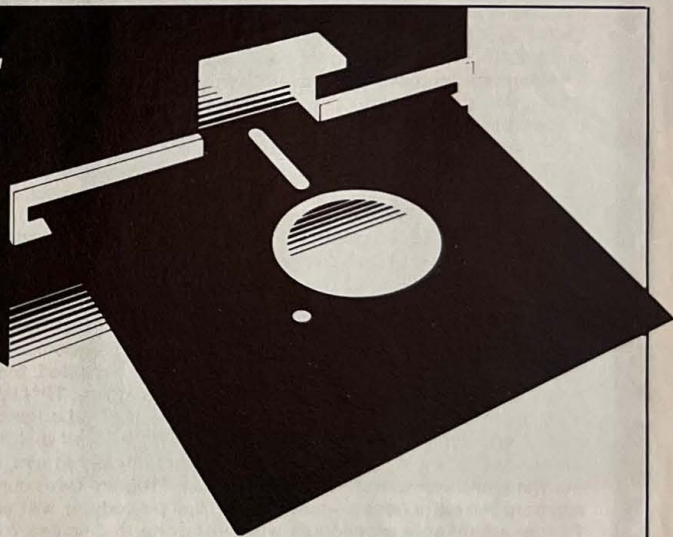
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Back issues of **SOFT SECTOR ON DISK** are available. Coverage of the PC Compatibles begins with the December 1986 issue. All issues prior to that are for the Sanyo 550/555 only.



To aid in your holiday shopping this season, we have put together a selection of gift ideas sure to please any PC Compatible user. After you've selected a few for your family and friends, we suggest you take a bright red, felt-tip marker, circle a couple of items that you like, fold the magazine open to this page and leave it laying on the coffee table for a few weeks.

Someone is sure to get the idea.

SOFT SECTOR'S

# Holiday Shopping Guide



The businessman in your family is sure to like *Clarion*, a business programming language with a new concept: You draw the screens and create the reports — *Clarion* writes the code. A single keystroke exits the editor, compiles and then executes the program. \$295.



A gift that will please anyone is the *Personal Choice Collection*, a group of personal productivity software for writing, filing and planning. \$119.95.



With *Computer Eyes*, you can capture those holiday moments and preserve them on disk. Video screens from a video camera, VCR or similar source can be saved for use with graphics programs, desktop publishing, picture databases, etc. \$249.95.

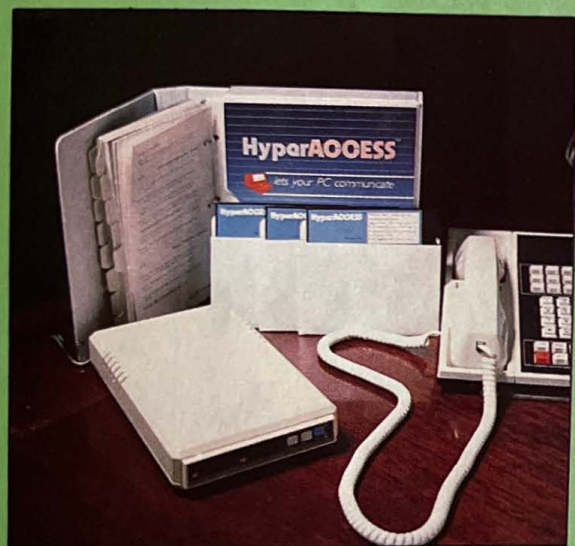




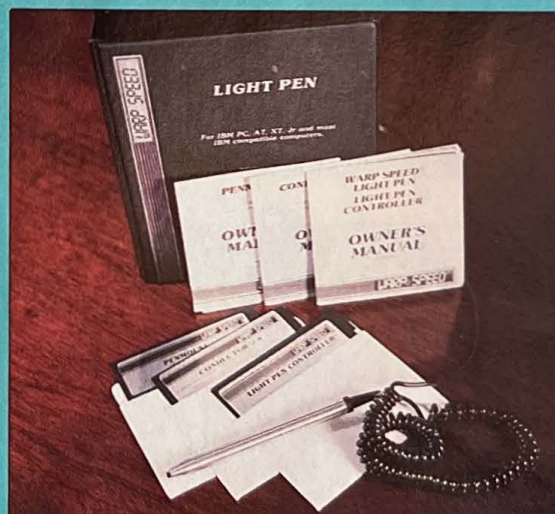
To make certain the lights are on when Santa arrives, how about the X-10 Powerhouse RS-232 Computer Interface, along with Appliance and Lamp Modules. \$69; modules \$17.99 each.



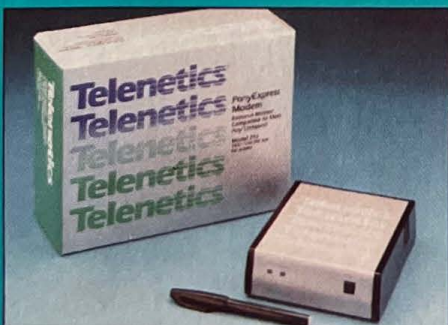
You can send hi-tech holiday greetings with the *Jingle Disk*, a program that lets you personalize animated graphics greetings on disk, accompanied by traditional carols. Or you can print out the greetings for those less fortunate who do not own a computer. \$9.95.



A great gift for that person who just can't stay offline would be *HyperAccess*, a powerful communications program that will fill the most demanding telecommunications needs. \$149. And to go with it, the Avatex 1200 Baud Modem. \$129.95.



For the person who loves gadgets there is the Warp Speed Light Pen, a professional quality, stainless steel pen for computer control, data input, Hi-Res graphics and many other applications. \$199.99.



If you do a lot to telecommunicating, you might like to get offline a little faster. Try the Telenetics PonyExpress 2400 Baud Modem, with high speed and Hayes compatibility — and still at a low price. \$495.

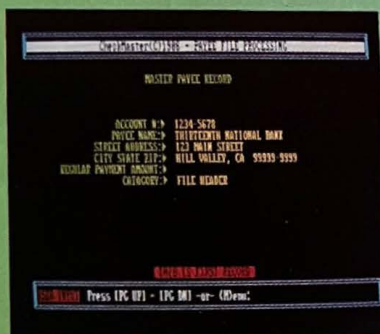




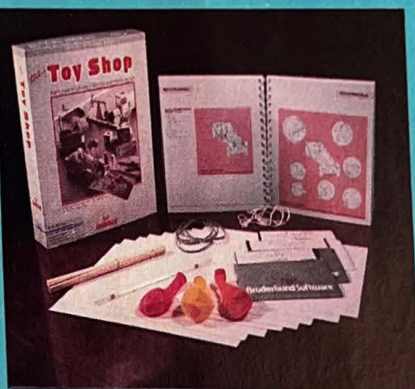
Wouldn't it be nice to print out your holiday cards on this Seikosha SP-1000A Dot Matrix Printer, offering loads of power at a stocking-stuffer price? \$209.



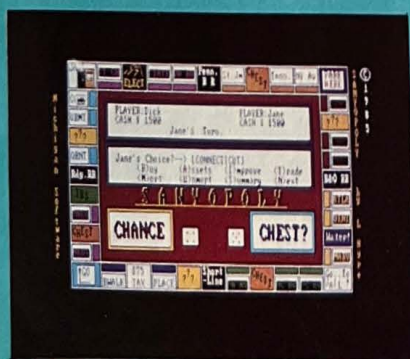
For the man who has everything, consider the Enigma Research Model 9000 Business Keyboard, featuring 40 function keys with "supershift" capability for 80 macros. \$350.



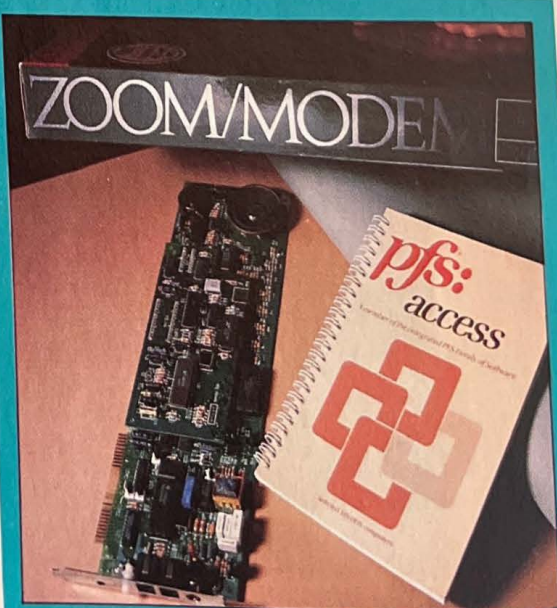
Keeping track of those post-holiday bills will be a breeze with *CheckMaster*. It totally automates your checking account, all the way to printing return address labels. \$29.



Instead of a few toys under the tree, why not the whole *Toy Shop*? Create 20 different working models on your dot matrix printer and special adhesive cardstock paper. \$64.95.



For Sanyo 550/555 users, here's a great new twist on a favorite cold weather pastime. *Sanyopoly* remains true to the original board game, but speeds up the routine tasks so that each game doesn't last till the spring thaw. \$29.95.



The telecommunicator wanting to make a step up this holiday season is sure to love the Zoomodem Model XL. Packed with every feature you could wish for in a modem, the Zoomodem XL operates at 1200 baud and includes a clock/calendar, RAM buffer and audio input for voice synthesizer output. Included in the package is *PFS:Access*, a full-featured communications program. \$349.

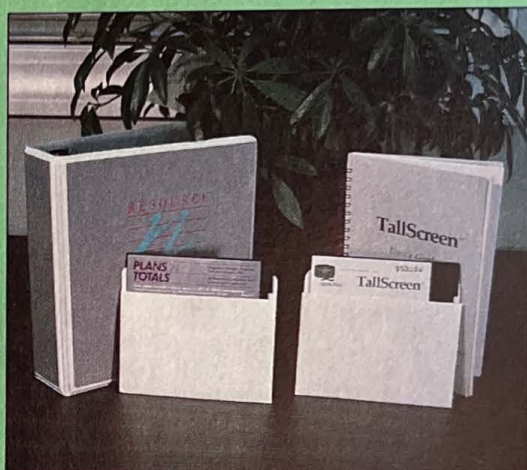




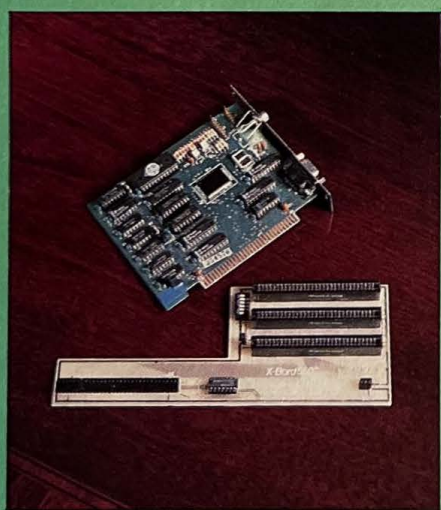
Spruce up your desk and your favorite input device with the MouseTop. \$5.95. Or maybe a foam rubber Computer Hammer for those who like to take out their frustrations without damaging equipment. \$8.95.



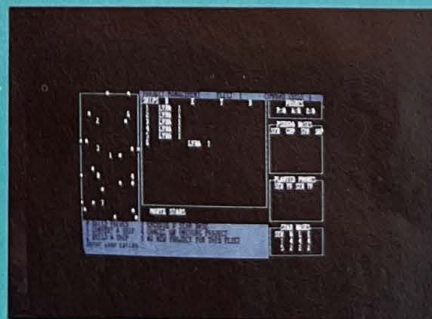
For a gift that keeps giving all year 'round, don't forget the best of all: subscriptions to **SOFT SECTOR** and **SOFT SECTOR ON DISK**. Or how about a handsome blue-and-gold **SOFT SECTOR Binder** to keep that valuable collection safe and easy-to-access?



Here are a couple of items for the power-users. **TallScreen** takes control of DOS, adding full-screen editing, a 1,000-line screen buffer, recall of 10 DOS commands and directory paths, macros and more. \$49.95. **Plans 'n Totals** is the gift to give for business planning, forecasting and budgeting. Ver. II, \$98; Ver. V, \$148 through Dec. 31, 1986.



At the top of any Sanyo 550/555 owner's wish list will be the **X-Bord550**: one slot for the **A-OK Video Board** (included), with mouse and light pen ports; a second for a hard disk controller; and another for a multi-function board with several optional daughterboards. \$185.



If you find yourself becoming sated with sentiments of peace and joy, just pop **Facing the Empire** into the disk drive for a little interstellar conflict. \$29.95.



## Holiday Shopping Guide Product Information

**Avatex 1200 Baud Modem:** Spectrum Projects, Inc., P.O. Box 264, Howard Beach, NY 11414; (718) 835-1344. \$129.95.

**CheckMaster:** Info-Napse Micro Services, 2801 Moorgate Road, Baltimore, MD 21222; (301) 282-3603. For all PC, XT and AT Compatibles with 256K and MS-DOS Ver. 2.00 and above. \$29.

**Clarion:** Barrington Systems, Inc., 150 East Sample Road, Pompano Beach, FL 33064; (305) 785-4555. For PC, XT and AT Compatibles with 320K, a hard disk and a parallel port. \$295 plus S/H.

**ComputerEyes:** Digital Vision, Inc., 14 Oak Street, Suite 2, Needham, MA 02192; (617) 444-9040. For PC Compatibles running at standard 4.77-MHz CPU speed and graphics capabilities. \$249.95; with video camera, \$589.95.

**Computer Hammer:** The Lyter Side, 511 Cottonwood, Canon City, CO 81212; (303) 275-1640. \$8.95.

**Enigma Research Model 9000 Business Keyboard:** Enigma Research, 4438 Manhattan Beach Blvd., #100, Lawndale, CA 90206; (213) 542-1352. Separate models for PC, XT and AT Compatibles. \$350.

**Facing the Empire:** MVP Software, 1035 Dallas SE, Grand Rapids, MI 49507; 616-245-

8376. For all PC, XT and AT compatibles and the Sanyo 550/555. \$29.95 plus \$3 S/H.

**HyperAccess:** Hilgraeve Inc., P.O. Box 941, Monroe, MI 48161; (800) 826-2760, (313) 243-0576. For PC, XT and AT Compatibles with 192K and MS-DOS Ver. 2.00 and above. \$149 plus \$5 S/H; demo disk, \$2.

**Jingle Disk:** Hi-Tech Expressions, 2699 South Bayshore Drive, Suite 1000A, Coconut Grove, FL 33133; (800) 848-9273, (305) 854-2318. For PC, XT and AT Compatibles with 256K. \$9.95.

**MouseTop:** H&H Enterprises, P.O. Box 2672, Corona, CA 91718; (714) 737-1376. \$5.95.

**Personal Choice Collection:** Activision Inc., 2350 Bayshore Frontage Road, Mountain View, CA 94043; (415) 960-0410. \$119.95.

**Plans 'n Totals:** Resource N Corporation, 721 Lowell Street, Carlisle, MA 01741; (617) 264-4450. For PC, XT and AT Compatibles with 512K. Regular prices: Ver. II, \$195; Ver. V, \$295; Ver. VIII, \$395; demo disk and manual, \$39; demo disk and tutorial, \$5. Fifty percent off for SOFT SECTOR readers who order before Dec. 31, 1986: Ver. II, \$98; Ver. V, \$148.

**Sanyopoly:** Michigan Software Distributors Inc., 43345 Grand River, Novi, MI 48050; (313) 348-4477. For the Sanyo 550/555 only. \$29.95.

**Seikosha SP-1000A Printer:** Cinsoft, 2235 Losantville Avenue, Cincinnati, OH 45237; (513) 396-SOFT. \$209.

**Tallscreen:** Qualitas, Inc., 8314 Thoreau Drive, Bethesda, MD 20817; (301) 469-8848. For PC, XT and AT Compatibles running MS-DOS Ver. 2.00 and above. \$49.95.

**Telenetics PonyExpress 2400 Baud Modem:** Telenetics Corporation, 895 E. Yorba Linda Blvd., Placentia, CA 92670; (714) 524-5770. \$495.

**The Toy Shop:** Broderbund Software, Inc., 17 Paul Drive, San Raphael, CA 94903-2102; (415) 479-1700. For PC, XT and AT Compatibles with 128K, graphics card, graphics printer and MS-DOS Ver. 2.00 and above. \$64.95.

**Warp Speed Light Pen:** Warp Speed Computer Products, Inc., 5555 South Inglewood Boulevard, Los Angeles, CA 90230; (800) 874-4315. \$199.99.

**X-10 Powerhouse:** X-10 (USA) Inc., 185A LeGrand Avenue, Northvale, NJ 07647; (201) 784-9700. For PC, XT and AT Compatibles with an RS-232 port. RS-232 Computer Interface, \$69.99; Lamp Module, \$17.99; Appliance Module, \$17.99.

**X-Bord550:** A-OK Computers, 816 Easley Street, Suite 615, Silver Spring, MD 20910; (301) 585-5105. For the Sanyo 550/555 only; requires the NEC V-20 CPU and Sanyo Video Board DOS, available separately. X-Bord550 with A-OK Video Board, \$185; NEC V-20, \$15.

**Zoomodem Model XL:** Zoom Telephonics, Inc., 207 South Street, Boston, MA 02111; (617) 423-1072. \$349.

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## Soft Sector's Technical Question-and-Answer Forum

*Q. I have two questions: How can I check if my Tandy DMP-420 printer is on from within a BASIC program? And, how can I toggle printer echo of the screen on and off from within a BASIC program (without pressing CTRL-P)?*

*D.R. Martin  
St. Thomas, Ontario*

**A.** The easiest way to check if your printer is online from within a BASIC program is to use the built-in ON ERROR GOTO statement. ON ERROR GOTO 100 will send a BASIC program to Line 100 if some type of error occurs. Here is a small program that will transfer control to Line 100 when the printer is not online:

```
10 ON ERROR GOTO 100
20 LPRINT
30 PRINT "PRINTER IS OK"
40 STOP
100 PRINT "PRINTER IS NOT
    OK":RESUME 120
120 PRINT "PROGRAM RESUMING AT
    120"
130 END
```

The RESUME statement in Line 100 tells BASIC where to go after an error. Refer to your BASIC manual for more information on these statements.

In regard to your second question: I cannot think of any way to echo screen output to the printer at this time. The only alternative I can offer would be to recode the program using LPRINTS to send the data to the printer or open the printer as a device and write to it.

*Q. When I use CHKDSK, I often get the error message, "Files cross-linked." I then get a list of a few files that are cross-linked with each other. I cannot tell*

*what is happening or why. I hope you can tell me what the problem is.  
Thanks for your help.*

*J. Fred Hall  
Sequim, WA*

**A.** MS-DOS uses what is called a File Allocation Table (FAT) to locate files on the disk. Each file is stored in what are called clusters (a cluster is one or more physical sectors on a disk). The directory points to the location in the FAT that indicates where the first cluster is located; then each FAT entry points to the next cluster. An example will clarify:

Directory entry:	Filename	First FAT entry	Other info
	LOTUS.COM	3	xxxxxx
FAT position:	1 2 3 4 5 6 7 8 9 10 11 12 13 14		
Entry in FAT:	x x 5 9	11 0	

The directory entry tells us that LOTUS.COM occupies Cluster Number 3 (which in most cases would be Logical Sector 3). Since FAT Position 3 has a 5 in it, we now know that LOTUS.COM occupies Cluster 5. The 9 in FAT Position 5 tells us that LOTUS occupies Cluster 9 and then Cluster 11. Since FAT Position 11 contains a 0, we know that Cluster 11 is the last cluster of the file.

If we look at the next example, we can see how multiple files work:

Directory entry:	Filename	First FAT entry	Other info
1	ABC.COM	2	xxxxxx
2	DEF.EXE	5	xxxxxx
FAT position:	1 2 3 4 5 6 7 8 9 10 11 12 13 14		
Entry in FAT:	x 4 7 6 9 11 12 0 13 0		

According to the FAT, file ABC.COM occupies clusters 2, 4, 7 and 11 while DEF.EXE occupies clusters 5, 6, 9, 12 and 13.

Now suppose the FAT looked as follows (assume the same directory entries as above):

FAT position:	1 2 3 4 5 6 7 8 9 10 11 12 13
Entry in FAT:	4 7 6 9 11 11 0

Note that ABC.COM occupies clusters 2, 4, 7 and 11 and that DEF.EXE occupies clusters 5, 6, 9 and 11. We have two files that share the same data, which is of course impossible. Therefore, these files are cross-linked.

This problem usually occurs when the files are not closed properly. The FAT for each disk is stored in memory and written to sectors at the beginning of the disk after each disk operation. Cross-linking (and other FAT errors) usually occurs when a file is not closed or a disk is removed from a drive before the program ends. The way to avoid this problem is to always end a program (or wait for a prompt for a disk change) before physically removing a disk from its drive. Of course, this is only applicable for programs that write to a disk; you do not have to take this precaution if a program is only reading data.

If you have a technical question concerning your PC Compatible, let us help you find the answer. Send it to Input/Output, The Falsoft Bldg., P.O. Box 385, Prospect, KY 40059.

**SS**

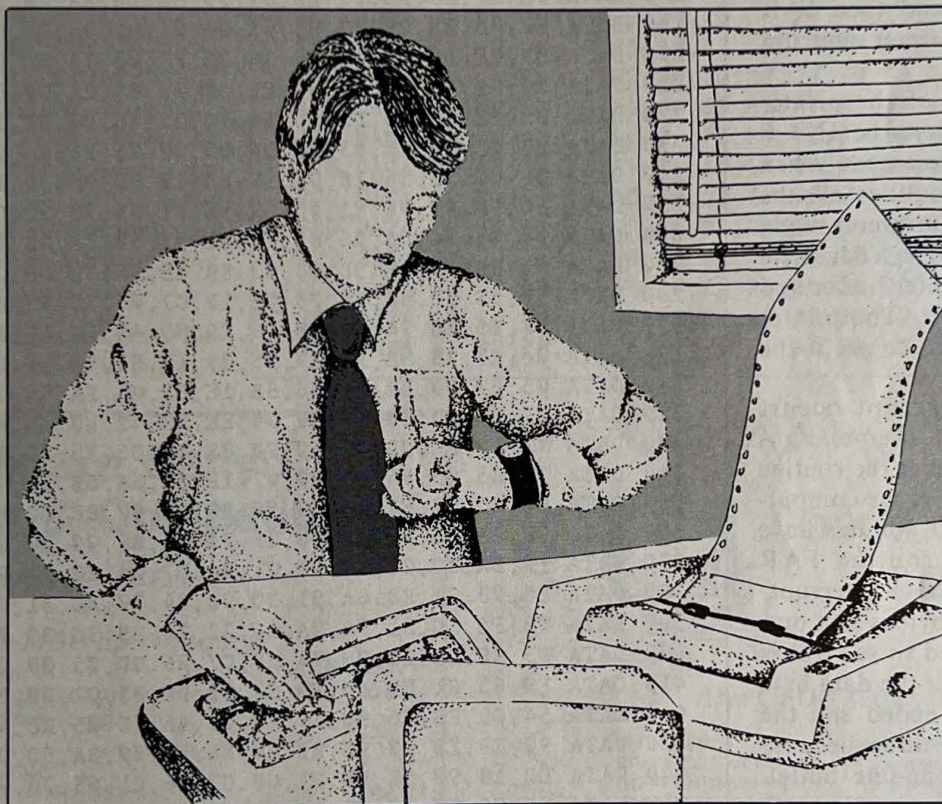
### STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

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# Soft Sector Print Spooler

By Bob Jack



Featuring menu control to clear the buffer, change its size, turn it off, and remove it from memory

**A**re you tired of sitting on your hands, waiting for your printer to print a large document or do a graphics dump before starting on your next project? Is your time valuable? Well, you may find *Soft Sector Print Spooler* to be just what you are looking for!

While a spooler doesn't speed up your printer, it does eliminate the time you waste waiting for your computer to be free. With a print spooler, you don't have to sit on your hands and wait.

## Why Does It Take So Long?

Even the fastest, paper-spitting, tree-eating printers operate at a snail's pace compared to the speed of a computer. This means the computer must wait for the printer, usually in some sort of loop, wasting time. And that slows down the work flow.

*Bob Jack is a self-employed small-business man who has been programming, using and writing about personal computers for the past 10 years. On Delphi, in the MS-DOS SIG, he is known as BJ85. He may be contacted at 8371 White Rd., Burbank, OH 44214; (216) 948-2059.*

Now, this problem of a fast computer and a slow peripheral device is not limited to personal computers. Even the "big boys" have this problem. The way they solve it is to put a buffer *between* the computer output and the printer.

## What's a Spooler?

Here is where the spooler comes in. It is a reserved section of memory — a buffer — in which the computer puts its printer data output. This frees the computer to do other things after it has dumped its printer data into the buffer.

The printer data is then sent to the printer, on a time-sharing basis, as the printer is ready for it.

This arrangement works so well that it's not uncommon for the printer to still be working on the first document while you have the next one ready to go. This is especially true if you are printing a large document, a graphics dump or have a slow printer such as a daisy wheel.



## How It Works

When you first run the *Soft Sector Print Spooler*, it looks up the printer port address, reserves memory for its printer buffer, and changes the interrupt pointers INT 8, INT 9, and INT 17H (Hex), to point to its own routines. Finally, it returns to DOS leaving itself in memory.

When most programs want to print something, they send the data out through INT 17H. This interrupt is intercepted, and the data is placed in the printer buffer. Various buffer pointers are updated and the interrupt is ended.

If a program is asking for a status check, the correct status is returned. Also, if the program is asking for a printer reset, this routine waits for the buffer to be emptied, and then FAR JUMPS to the normal printer interrupt for the printer reset.

To get the data out of the printer buffer and to the printer, the INT 8 (clock interrupt) is intercepted. When INT 8 is triggered, the routine polls the printer port to see if the printer is ready to accept a data byte. If it is, a data byte is obtained from the printer buffer and sent out the printer port. The printer port is then polled again to see if the printer is ready.

Since the clock interrupt occurs about 20 times a second, the polling is limited to 100 times so that the routine doesn't "hog" too much of the computer's time. When the 100 pollings have been exhausted, the routine FAR JUMPS to the normal clock interrupt.

Also, after each data byte is sent out, that data byte is checked to see if it is a CR (carriage return). If the data byte is a CR, the polling is ended and the routine exited. This is done because most printers have a one-line buffer. They generally begin printing that line after receiving a CR and there is no need to waste time polling while the printer is printing. Also, the polling does not begin again until the printer has finished and is ready to accept a new data byte.

Finally, INT 9 (keyboard interrupt) is intercepted and checked for a control menu request.

The operation of these three interrupt intercepts is so smooth you will not be able to notice any slowing of the computer's performance, even though the printer is working.

## How to Use the Spooler

Carefully type in the BASIC program in Listing 1. Save it to disk, and then run it. The program in Listing 1 creates

## Listing 1: MSSPL.BAS

```
10 ' SOFT SECTOR PRINT SPOOLER
20 ' for most MS-DOS systems (IBM PC/XT & Compatibles)
30 ' by Bob Jack - September 27, 1986
40 '
50 CLS
60 PRINT "Press any key to create MSSPOOL.COM ";
70 ANS$=INKEY$:IF ANS$="" THEN 70
80 PRINT:PRINT "One moment please"
90 OPEN "O",#1,"MSSPOOL.COM"
100 FOR X=1 TO 1515
110 READ HB$
120 OB$=CHR$(VAL("&H"+HB$))
130 PRINT #1,OB$;
140 NEXT X
150 CLOSE #1
160 PRINT "All done"
170 END
180 DATA 0E,1F,E8,F3,01,E8,07,00,8B,D0,B8,00,31,CD,21,B8
190 DATA EB,06,03,06,E7,05,05,00,01,B1,04,D3,E8,C3,FB,2E
200 DATA 83,3E,DD,05,01,74,34,80,FC,00,74,0D,80,FC,01,74
210 DATA 22,80,FC,02,74,06,EB,28,90,E8,25,00,50,2E,A1,E7
220 DATA 05,2E,39,06,DF,05,58,74,05,B4,90,EB,13,90,B4,10
230 DATA EB,0E,90,2E,83,3E,DF,05,00,75,F8,EA,00,00,00,00
240 DATA CF,50,53,56,1E,0E,1F,8B,1E,E7,05,39,1E,DF,05,74
250 DATA F6,50,FF,06,E1,05,39,1E,E1,05,72,06,C7,06,E1,05
260 DATA 00,00,BE,EB,06,8B,1E,E1,05,58,FA,88,00,FF,06,DF
270 DATA 05,FB,1F,5E,5B,58,C3,FB,2E,83,3E,DD,05,01,74,6C
280 DATA 50,53,52,56,1E,06,0E,1F,C7,06,E5,05,64,00,83,3E
290 DATA DF,05,00,74,51,8B,16,E9,05,42,EC,A8,80,74,40,FF
300 DATA 06,E3,05,8B,1E,E7,05,39,1E,E3,05,72,06,C7,06,E3
310 DATA 05,00,00,BE,EB,06,8B,1E,E3,05,FA,8A,00,8A,E0,FF
320 DATA 0E,DF,05,8B,16,E9,05,EE,42,42,B0,1D,EE,B0,1C,EE
330 DATA FB,80,FC,0D,74,10,FF,0E,E5,05,75,B2,EB,08,90,83
340 DATA 3E,E5,05,64,75,F0,07,1F,5E,5A,5B,58,EA,00,00,00
350 DATA 00,CD,67,FA,06,53,50,B8,40,00,8E,C0,26,8B,1E,1A
360 DATA 00,26,8B,07,3D,00,2F,75,7A,B8,00,00,26,89,07,0E
370 DATA 1F,BA,EC,03,E8,9F,01,BA,E7,04,E8,99,01,BA,40,05
380 DATA E8,93,01,E8,8A,01,3C,0D,74,70,3C,31,72,F5,3C,34
390 DATA 73,F1,3C,31,74,0A,3C,32,74,2B,3C,33,74,33,EB,E3
400 DATA 83,3E,DD,05,00,74,0F,C7,06,DD,05,00,00,BA,9D,05
410 DATA E8,63,01,EB,45,90,C7,06,DD,05,01,00,BA,BD,05,E8
420 DATA 54,01,EB,36,90,E8,1F,00,BA,7D,05,E8,48,01,EB,2A
430 DATA 90,E8,2B,00,BB,20,00,E8,56,00,BA,5D,05,E8,36,01
440 DATA EB,18,90,58,5B,07,CF,C7,06,E1,05,00,00,C7,06,E3
450 DATA 05,00,00,C7,06,DF,05,00,00,C3,B8,00,4C,CD,21,1E
460 DATA 8B,16,0D,02,A1,0F,02,8E,D8,B8,08,25,CD,21,1F,B8
470 DATA 67,35,CD,21,1E,06,1F,8B,D3,B8,09,25,CD,21,1F,1E
480 DATA 8B,16,5C,01,A1,5E,01,8E,D8,B8,17,25,CD,21,1F,C3
490 DATA 0E,07,B8,00,4A,CD,21,C3,BA,EC,03,E8,D8,00,E8,51
500 DATA 00,B8,08,35,CD,21,89,1E,0D,02,8C,06,0F,02,B8,09
510 DATA 35,CD,21,1E,06,1F,8B,D3,B8,67,25,CD,21,1F,BA,11
520 DATA 02,B8,09,25,CD,21,B8,17,35,CD,21,89,1E,5C,01,8C
530 DATA 06,5E,01,B8,08,25,BA,97,01,CD,21,B8,17,25,BA,1E
540 DATA 01,CD,21,B8,40,00,8E,C0,BE,08,00,26,8B,04,A3,E9
550 DATA 05,C3,2E,A1,82,00,3C,31,72,54,3C,35,73,50,50,BA
560 DATA 37,04,E8,71,00,58,3C,34,75,0F,C7,06,E7,05,00,F0
570 DATA BA,4E,04,E8,60,00,EB,57,90,3C,33,75,0F,C7,06,E7
580 DATA 05,00,C0,BA,5D,04,E8,4D,00,EB,44,90,3C,32,75,0F
590 DATA C7,06,E7,05,00,80,BA,6C,04,E8,3A,00,EB,31,90,C7
600 DATA 06,E7,05,00,40,BA,7B,04,E8,2B,00,EB,22,90,BA,8A
610 DATA 04,E8,22,00,BA,40,05,E8,1C,00,E8,13,00,3C,31,72
620 DATA F9,3C,35,73,F5,50,BA,36,04,E8,0A,00,58,EB,97,C3
630 DATA B8,00,00,CD,16,C3,8B,DA,2E,8A,07,3C,24,74,0C,53
640 DATA BB,00,00,B4,0E,CD,10,5B,43,EB,ED,C3,0D,0A,2D,20
```



a file called MSSPL.COM, which can be copied to any disk you want the spooler to be on.

The buffer size that the spooler creates can be controlled using these commands:

Command	Buffer Size
MSSPL 1	16K
MSSPL 2	32K
MSSPL 3	48K
MSSPL 4	64K

This method of activating the spooler is generally reserved for use in an AUTOEXEC.BAT file.

If you just type in MSSPL, the program displays a menu of the four buffer size choices. This gives you the opportunity to select the size you want for a specific application.

Once the spooler has been activated, it is designed to work automatically with little or no attention. However, there are special times when it would be desirable to be able to control the operation.

You can bring up a control menu — from the DOS level only — by pressing ALT-V. This menu contains:

Spooler On/Off A toggle to turn the spooler on or off.

```

650 DATA 2A,20,2D,20,20,53,6F,66,74,20,53,65,63,74,6F,72
660 DATA 20,4D,61,67,61,7A,69,6E,65,27,73,20,20,2D,20,2A
670 DATA 20,2D,0D,0A,20,20,20,20,20,20,20,4D,53,2D,44,4F
680 DATA 53,20,50,72,69,6E,74,65,72,20,53,70,6F,6F,6C,65
690 DATA 72,0D,0A,0D,0A,24,0D,20,20,20,20,20,20,20,20,20
700 DATA 42,75,66,66,65,72,20,73,69,7A,65,3A,20,24,36,34
710 DATA 4B,20,20,20,20,20,20,20,20,0D,0A,0D,0A,24,34,38,4B
720 DATA 20,20,20,20,20,20,20,20,0D,0A,0D,0A,24,33,32,4B,20
730 DATA 20,20,20,20,20,20,0D,0A,0D,0A,24,31,36,4B,20,20
740 DATA 20,20,20,20,20,0D,0A,0D,0A,24,20,20,20,20,20,20
750 DATA 20,20,20,20,20,20,31,29,2E,20,20,20,31,36,4B,0D
760 DATA 0A,20,20,20,20,20,20,20,20,20,20,20,20,32,29,2E
770 DATA 20,20,20,33,32,4B,0D,0A,20,20,20,20,20,20,20,20
780 DATA 20,20,20,20,33,29,2E,20,20,20,34,38,4B,0D,0A,20
790 DATA 20,20,20,20,20,20,20,20,20,20,20,20,34,29,2E,20,20
800 DATA 20,36,34,4B,0D,0A,24,20,20,20,20,20,20,20,20,31
810 DATA 29,2E,20,20,20,53,70,6F,6F,6C,65,72,20,4F,6E,2F
820 DATA 4F,66,66,0D,0A,20,20,20,20,20,20,20,20,32,29,2E
830 DATA 20,20,20,43,6C,65,61,72,20,42,75,66,66,65,72,0D
840 DATA 0A,20,20,20,20,20,20,20,20,33,29,2E,20,20,20,52
850 DATA 65,6D,6F,76,65,20,53,70,6F,6F,6C,65,72,0D,0A,24
860 DATA 0D,0A,20,20,20,20,20,20,20,20,20,63,65,6C,65,63,74
870 DATA 69,6F,6E,20,50,6C,65,61,73,65,3A,20,24,0D,20,20
880 DATA 20,20,20,20,20,20,20,20,20,53,70,6F,6F,6C,65,72
890 DATA 20,52,65,6D,6F,76,65,64,0D,0A,0D,0A,24,0D,20,20
900 DATA 20,20,20,20,20,20,20,20,20,42,75,66,66,65,72,20
910 DATA 43,6C,65,61,72,65,64,20,0D,0A,0D,0A,24,0D,20,20
920 DATA 20,20,20,20,20,20,20,20,20,20,20,20,53,70,6F,6F,6C
930 DATA 65,72,20,4F,6E,20,20,20,0D,0A,0D,0A,24,0D,20,20
940 DATA 20,20,20,20,20,20,20,20,20,20,20,20,53,70,6F,6F,6C
950 DATA 65,72,20,4F,66,66,20,20,0D,0A,0D,0A,24,00,00,00

```

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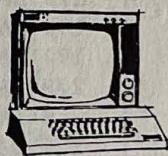
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**Clear Buffer** Clears the spooler buffer, so you don't have to wait for the printer in case you have filled the buffer with a wrong document.

**Remove Spooler** Disconnects and removes the spooler, giving back the memory.

If you have accidentally activated the control menu, just press ENTER to return to DOS without any changes. *Always* activate the control menu (ALT-V) only from the DOS level, as it will always return to the DOS level. If you activate it while inside another program, there is a good chance you will lose any data created by the program (e.g., a word processor file, etc.).

### Operation Overview

As an overview, the spooler automatically looks up the port address for LPT1 and buffers any printer data going to INT 17H. Its timing is controlled by INT 8, and it also taps into INT 9 (keyboard interrupt) to check for a request for the control menu.

It is suggested that you do not mix programs that use the normal INT 17H for printing with programs that directly address the printer port (do not use INT 17H), as a conflict will occur with unknown results.

### COMPATIBILITY PROFILE

- MSSPL (Listing 1) runs in GW-BASIC on all true PC Compatibles tested, as well as the MSSPL.COM program that is created.
  - SANSPL (Listing 2) runs in GW-BASIC and Sanyo BASIC on the Sanyo 550/555. The SANSPL.COM program runs on both the standard system and those with the Video RAM Board. Use SHIFT-CONTROL-V to activate the spooler control menu.
- Under the standard Sanyo DOS, the CONTROL-P printer toggle does not make use of the normal INT 17H. Care should be taken to not mix printer outputs, as a conflict will occur.
- As with any memory-resident program, some experimentation may be necessary for proper operation when used in conjunction with other memory-resident programs. In order to use the option to deactivate the spooler to free up memory, it must be the last memory-resident program loaded.

```

960 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
970 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
980 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
990 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1000 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1010 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1020 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1030 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1040 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1050 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1060 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1070 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1080 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1090 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1100 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1110 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1120 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00

```

### Listing 2: SANSPL.BAS

```

10 ' SOFT SECTOR PRINT SPOOLER
20 ' for SANYO MBC-550/555
30 ' by Bob Jack - September 26, 1986
40 '
50 CLS
60 PRINT "Press any key to create SANSPool.COM ";
70 ANS$=INKEY$:IF ANS$="" THEN 70
80 PRINT:PRINT "One moment please"
90 OPEN "O",#1,"SANSPool.COM"
100 FOR X=1 TO 1506
110 READ HB$
120 OB$=CHR$(VAL("&H"+HB$))
130 PRINT #1,OB$;
140 NEXT X
150 CLOSE #1
160 PRINT "All done"
170 END
180 DATA 0E,1F,E8,F3,01,E8,07,00,8B,D0,B8,00,31,CD,21,B8
190 DATA E2,06,03,06,DE,05,05,00,01,B1,04,D3,E8,C3,FB,2E
200 DATA 83,3E,D4,05,01,74,34,80,FC,00,74,0D,80,FC,01,74
210 DATA 22,80,FC,02,74,06,EB,28,90,E8,25,00,50,2E,A1,DE
220 DATA 05,2E,39,06,D6,05,58,74,05,B4,90,EB,13,90,B4,10
230 DATA EB,0E,90,2E,83,3E,D6,05,00,75,F8,EA,00,00,00,00
240 DATA CF,05,53,56,1E,0E,1F,8B,1E,DE,05,39,1E,D6,05,74
250 DATA F6,50,FF,06,D8,05,39,1E,D8,05,72,06,C7,06,D8,05
260 DATA 00,00,BE,E2,06,8B,1E,D8,05,58,FA,88,00,FF,06,D6
270 DATA 05,FB,1F,5E,5B,58,C3,FB,2E,83,3E,D4,05,01,74,75
280 DATA 50,53,52,56,1E,06,0E,1F,C7,06,DC,05,64,00,83,3E
290 DATA D6,05,00,74,5A,8B,16,E0,05,42,42,EC,A8,10,74,48
300 DATA FF,06,DA,05,8B,1E,DE,05,39,1E,DA,05,72,06,C7,06
310 DATA DA,05,00,00,BE,E2,06,8B,1E,DA,05,FA,8A,00,8A,E0
320 DATA FF,0E,D6,05,8B,16,E0,05,F6,D0,EE,42,42,42,42,D4
330 DATA 0A,B0,07,EE,D4,0A,B0,06,EE,FB,80,FC,0D,74,10,FF
340 DATA 0E,DC,05,75,A9,EB,08,90,83,3E,DC,05,64,75,F0,07
350 DATA 1F,5E,5A,5B,58,EA,00,00,00,00,CD,67,FA,06,53,50
360 DATA B8,00,01,CD,16,74,7C,3D,00,2F,75,77,E8,99,01,0E
370 DATA 1F,BA,E4,03,E8,97,01,BA,DE,04,E8,91,01,BA,37,05
380 DATA E8,8B,01,E8,82,01,3C,0D,74,70,3C,31,72,F5,3C,34
390 DATA 73,F1,3C,31,74,0A,3C,32,74,2B,3C,33,74,33,EB,E3
400 DATA 83,3E,D4,05,00,74,0F,C7,06,D4,05,00,00,BA,94,05
410 DATA E8,5B,01,EB,45,90,C7,06,D4,05,01,00,BA,B4,05,E8
420 DATA 4C,01,EB,36,90,E8,1F,00,BA,74,05,E8,40,01,EB,2A
430 DATA 90,E8,2B,00,BB,20,00,E8,56,00,BA,54,05,E8,2E,01
440 DATA EB,18,90,58,5B,07,CF,C7,06,D8,05,00,00,C7,06,DA
450 DATA 05,00,00,C7,06,D6,05,00,00,C3,B8,00,4C,CD,21,1E
460 DATA 8B,16,16,02,A1,18,02,8E,D8,B8,08,25,CD,21,1F,B8
470 DATA 67,35,CD,21,1E,06,1F,8B,D3,B8,FB,25,CD,21,1F,1E

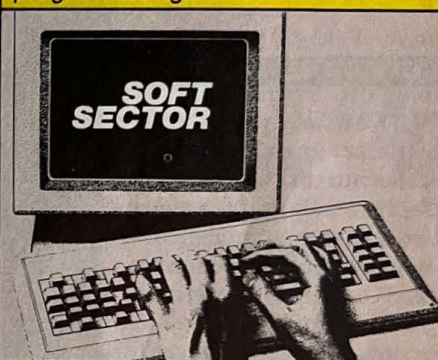
```



## Submitting Material

Contributions for publication in **SOFT SECTOR** are welcome from everyone. We publish a variety of programs for PC Compatibles that are useful, helpful or just plain fun.

• **WHAT TO WRITE:** We accept for consideration anything that is well-written and has a practical application for MS-DOS, PC Compatible users. If it interests you, it will probably interest lots of others. We accept general computer articles, program patches and hardware projects. However, we prefer articles with accompanying programs that can be entered and run, particularly, but not exclusively, in GW-BASIC. We can prepare finished tables, diagrams and schematics from your rough drafts if you provide legible copy and full directions. We have a continuing need for short articles with short program listings.



• **FORMAT:** Unless the program accompanying your submission is less than 10 lines, we must have the program itself on disk. We will print out the listing to our specifications. Though it is not mandatory, we also prefer that editorial copy be included on the disk, using any of the word processors currently available for PC Compatibles. However, please also include a double-spaced printout of your editorial material and program listing. Do not send text in all capital letters; use upper- and lowercase.

• **COMPENSATION:** We do pay for submissions, based on a number of criteria. Those wishing remuneration should so state when making submissions.

Please do not submit programs or articles currently submitted to another publication.

Those who would like more detailed information on making submissions may send a self-addressed, stamped envelope to: Submissions Editor, **SOFT SECTOR**, The Falsoft Building, P.O. Box 385, Prospect, KY 40059. We will send you comprehensive guidelines.

```

480 DATA 8B,16,5C,01,A1,5E,01,8E,D8,B8,17,25,CD,21,1F,C3
490 DATA 0E,07,B8,00,4A,CD,21,C3,BA,E4,03,E8,D0,00,E8,49
500 DATA 00,B8,08,35,CD,21,89,1E,16,02,8C,06,18,02,B8,FB
510 DATA 35,CD,21,1E,06,1F,8B,D3,B8,67,25,CD,21,1F,BA,1A
520 DATA 02,B8,FB,25,CD,21,B8,17,35,CD,21,89,1E,5C,01,8C
530 DATA 06,5E,01,B8,08,25,BA,97,01,CD,21,B8,17,25,BA,1E
540 DATA 01,CD,21,C7,06,E0,05,1A,00,C3,2E,A1,82,00,3C,31
550 DATA 72,54,3C,35,73,50,50,BA,2E,04,E8,71,00,58,3C,34
560 DATA 75,0F,C7,06,DE,05,00,F0,BA,45,04,E8,60,00,EB,57
570 DATA 90,3C,33,75,0F,C7,06,DE,05,00,C0,BA,54,04,E8,4D
580 DATA 00,EB,44,90,3C,32,75,0F,C7,06,DE,05,00,80,BA,63
590 DATA 04,E8,3A,00,EB,31,90,C7,06,DE,05,00,40,BA,72,04
600 DATA E8,2B,00,EB,22,90,BA,81,04,E8,22,00,BA,37,05,E8
610 DATA 1C,00,E8,13,00,3C,31,72,F9,3C,35,73,F5,50,BA,2D
620 DATA 04,E8,0A,00,58,EB,97,C3,B8,00,00,CD,16,C3,8B,DA
630 DATA 2E,8A,07,3C,24,74,0C,53,BB,00,00,B4,0E,CD,10,5B
640 DATA 43,EB,ED,C3,0D,0A,2D,20,2A,20,2D,20,20,53,6F,66
650 DATA 74,20,53,65,63,74,6F,72,20,4D,61,67,61,7A,69,6E
660 DATA 65,27,73,20,20,2D,20,2A,20,2D,0D,0A,20,20,20,20
670 DATA 20,20,20,53,41,4E,59,4F,20,50,72,69,6E,74,65,72
680 DATA 20,53,70,6F,6F,6C,65,72,0D,0A,0D,0A,24,0D,20,20
690 DATA 20,20,20,20,20,20,20,42,75,66,66,65,72,20,73,69
700 DATA 7A,65,3A,20,24,36,34,4B,20,20,20,20,20,20,0D,0A
710 DATA 0A,0D,0A,24,34,38,4B,20,20,20,20,20,20,0D,0A
720 DATA 0D,0A,24,33,32,4B,20,20,20,20,20,20,0D,0A,0D
730 DATA 0A,24,31,36,4B,20,20,20,20,20,20,0D,0A,0D,0A
740 DATA 24,20,20,20,20,20,20,20,20,20,20,20,31,29,2E
750 DATA 20,20,20,31,36,4B,0D,0A,20,20,20,20,20,20,20,20
760 DATA 20,20,20,20,32,29,2E,20,20,20,33,32,4B,0D,0A,20
770 DATA 20,20,20,20,20,20,20,20,20,20,20,20,33,29,2E,20,20
780 DATA 20,34,38,4B,0D,0A,20,20,20,20,20,20,20,20,20,20
790 DATA 20,20,34,29,2E,20,20,20,36,34,4B,0D,0A,24,20,20
800 DATA 20,20,20,20,20,20,20,31,29,2E,20,20,20,53,70,6F,6F
810 DATA 6C,65,72,20,4F,6E,2F,4F,6E,66,66,0D,0A,20,20,20,20
820 DATA 20,20,20,20,32,29,2E,20,20,20,43,6C,65,61,72,20
830 DATA 42,75,66,66,65,72,0D,0A,20,20,20,20,20,20,20,20
840 DATA 33,29,2E,20,20,20,52,65,6D,6F,76,65,20,53,70,6F
850 DATA 6F,6C,65,72,0D,0A,24,0D,0A,20,20,20,20,20,20,20
860 DATA 20,53,65,6C,65,63,74,69,6F,6E,20,50,6C,65,61,73
870 DATA 65,3A,20,24,0D,20,20,20,20,20,20,20,20,20,20,20
880 DATA 53,70,6F,6F,6C,65,72,20,52,65,6D,6F,76,65,64,0D
890 DATA 0A,0D,0A,24,0D,20,20,20,20,20,20,20,20,20,20,20
900 DATA 42,75,66,66,65,72,20,43,6C,65,61,72,65,64,20,0D
910 DATA 0A,0D,0A,24,0D,20,20,20,20,20,20,20,20,20,20,20
920 DATA 20,20,53,70,6F,6F,6C,65,72,20,4F,6E,20,20,20,0D
930 DATA 0A,0D,0A,24,0D,20,20,20,20,20,20,20,20,20,20,20
940 DATA 20,20,53,70,6F,6F,6C,65,72,20,4F,66,66,20,20,0D
950 DATA 0A,0D,0A,24,00,00,00,00,00,00,00,00,00,00,00,00
960 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
970 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
980 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
990 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1000 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1010 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1020 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1030 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1040 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1050 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1060 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1070 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1080 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1090 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1100 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1110 DATA 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
1120 DATA 00,00,00

```

SS



# EDITORS' CHOICE

## The Microsoft QuickBASIC Compiler Version 2.0

### SOFTWARE

**Y**ou say you like to program in BASIC, but things are just too slow? Perhaps you've tried a BASIC compiler and found it too awkward to use. Now there's a solution to your problem: *QuickBASIC* Version 2.0 from Microsoft. It is the fastest BASIC compiler on the market. I say that with a fair degree of confidence since I just spent several weeks calling people about BASIC compilers for use in my job. Everyone I spoke with told me up front that although their product had extended instruction sets, greater floating-point speed (with a coprocessor), or greater accuracy, they could not keep up with *QuickBASIC* in the area of overall speed.

*QuickBASIC* has its own built-in editor and debugger and sells for \$99. I call that hard to beat. If you are getting the impression that I like *QuickBASIC*, you are absolutely correct. I did not reach that conclusion quickly; I have been using *QuickBASIC* 2.0 since July, having upgraded from *QuickBASIC* 1.01 at that time. The problem there was that in order to debug effectively, it was necessary to write the program in BASICA, then compile it. The problem was, some things just didn't run the same way

in the compiled version. Since then, I have written a lot of lines of BASIC using Version 2.0, and the improvement is tremendous. It is much more versatile than Version 1.01.

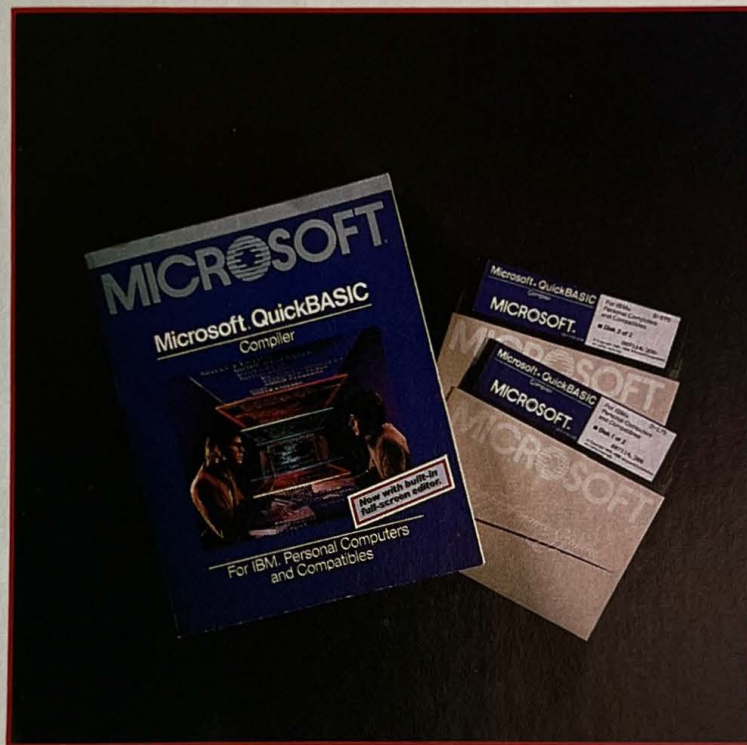
To begin with, there's the editor. When you load *QuickBASIC*, a window comes up. If you want to edit a previous BASIC file, press ALT-F and L for load. You are presented with a window displaying all the BASIC files available in the directory. Just type in your choice and press ENTER to load. If you are starting from scratch, press the ESCAPE key and the window disappears, leaving a blank screen to write your code on.

You can number the lines as you go along, or leave out the line numbers and use labels. I prefer the latter because I

have a tendency to write more structured and logical code without line numbers. The only disadvantage I can see is that your code will not run in interpreted BASIC. That isn't even a real disadvantage since *QuickBASIC* has a memory compile and run feature similar to that of *Turbo PASCAL*. Just press CONTROL-R, and your program will compile in memory and then run.

If there are errors, the compiler will display the error message in a window at the bottom of the screen and place the cursor on the line that is causing the problem. Just correct the error and push CONTROL-R again.

Once you have your program debugged, you have several routes to go: You can run it as often as you like from *QuickBASIC* just as described above;



With big features and a small price, Microsoft brings a compiler into the reach of most users and breathes new life into the BASIC language



you can compile it as an .OBJ file then link it with the supplied BCOM20 run time library to create a stand-alone "run-on-any-machine" file; you can create an .OBJ file that will run with the BASRUN library; or you can create an .EXE file directly from the compiler.

When you decide to leave *QuickBASIC* after an editing session, a window will pop up asking if you want to save your file. Press any key to save it. You should save the file you are working on periodically, though, since it is possible that the computer will "hang" during a debugging session. If you have to reboot, all your recent changes are gone. This is no more a problem in *QuickBASIC* than in the interpreter, or any other software package that accepts input.

You can create an .OBJ file without using the editor by typing QB FILENAME /O;. This creates a file that can be linked as described above into a stand-alone .EXE file. If you choose to compile from the editor after you have finished debugging, be sure to turn off the debug option before compiling. Failure to do that will cause your program to run more slowly because of the error checking. Since the debugging is finished, you don't need that option anymore.

I know all about the speed problem with debug, and it makes a big difference. As I was running some benchmarks for this review, I noticed a definite sluggishness on most of the benchmarks. I called Microsoft, and spoke with a gentleman who suggested I turn off the debug option. I did so, and everything ran fine. As usual, the people at Microsoft were helpful and friendly.

My problem was that I hadn't read everything I should have. I'm sure none of you would think of using a software package without reading the manual first. That being the case, you should have no problems at all. My only excuse is that, at work, I never compile from the editor. If you compile directly, debug is automatically off.

The manual, by the way, is excellent. It is about an inch and a half thick and covers all the instructions available to the language. Some of you may recall that *QuickBASIC* Version 1.01 was shipped with a small manual that was essentially a supplement to your standard BASIC manual. This one is complete. I couldn't say it's the best manual I have ever seen, but it is one of the best I have seen from a major software publisher.

Here's a short and sparse overview of *QuickBASIC* Version 2.0: You can now dimension arrays outside the standard 64K boundary, easily build your own library of "callable" routines, make use of DOS calls directly from BASIC, make full use of all the standard video adapters including all EGA modes, and write and debug your software in the supplied full-screen editor. All that and speed, too. And of course there's more; there just isn't room to discuss all the features here.

As for speed, I ran several benchmarks on several different computers. The results reported here were obtained from a standard IBM PC XT with 640K RAM, a color graphics card and a 10-Meg fixed disk. Load time is not a

**"I believe that  
*QuickBASIC* is more  
than just another  
BASIC compiler.  
*QuickBASIC* is more  
of a 'happening.'"**

factor, only the actual running time. All comparisons were made to standard IBM BASIC Version 3.1.

Even though it wasn't put in the chart, I did run the Eratosthenes' Sieve in *Turbo PASCAL*. I found it somewhat surprising that *QuickBASIC* was faster. That is the only benchmark I have in PASCAL, and I am not qualified to program the others properly in PASCAL.

All times are in seconds rounded to the nearest tenth.

Sieve		Open Loop	
BASICA	QB2	BASICA	QB2
2036.6	15.5	10.3	0.6
Add		Div	
BASICA	QB2	BASICA	QB2
23.0	0.6	25.9	0.6

The *Sieve* benchmark was taken from *BYTE* magazine, January 1983. It has become probably the single most popular benchmark for checking language implementations and computer speed. *Open Loop* is a FOR-NEXT loop from 1 to 30,000 with no other operations taking place. *Add* is 10,000 single precision addition operations, and was supplied by Microsoft. *Div* is 10,000 single precision division operations and is also courtesy of Microsoft.

As you can see, the speed increase over BASIC is pronounced. The difference becomes a little less spectacular when performing graphics operations, but that is to be expected since the limiting factor there is the manner in which the video is handled. *QuickBASIC* is still significantly quicker than BASIC, it just doesn't jump out at you the way the mathematical operations do.

*QuickBASIC* is a well thought out BASIC compiler. It is capable of compiling most programs written for BASIC, which means you won't have to do much rewriting on your old programs to compile them under *QuickBASIC*. The big advantage, though, is afforded by the ease with which you can generate new software in BASIC — *QuickBASIC* that is. Your biggest advantage, in my opinion, comes from using *QuickBASIC* from start to finish. That means, write the code using the editor, debug it with memory compile and the debug option, then compile and link it with whatever other modules you might need. It's all there. I honestly cannot picture anyone ever wanting to use the interpreter again for any program over a few lines in length.

The best way to view *QuickBASIC* is not in relation to BASIC, but as a separate language or perhaps, more accurately, as a separate dialect of BASIC that happens to be very similar in its syntax to BASIC.

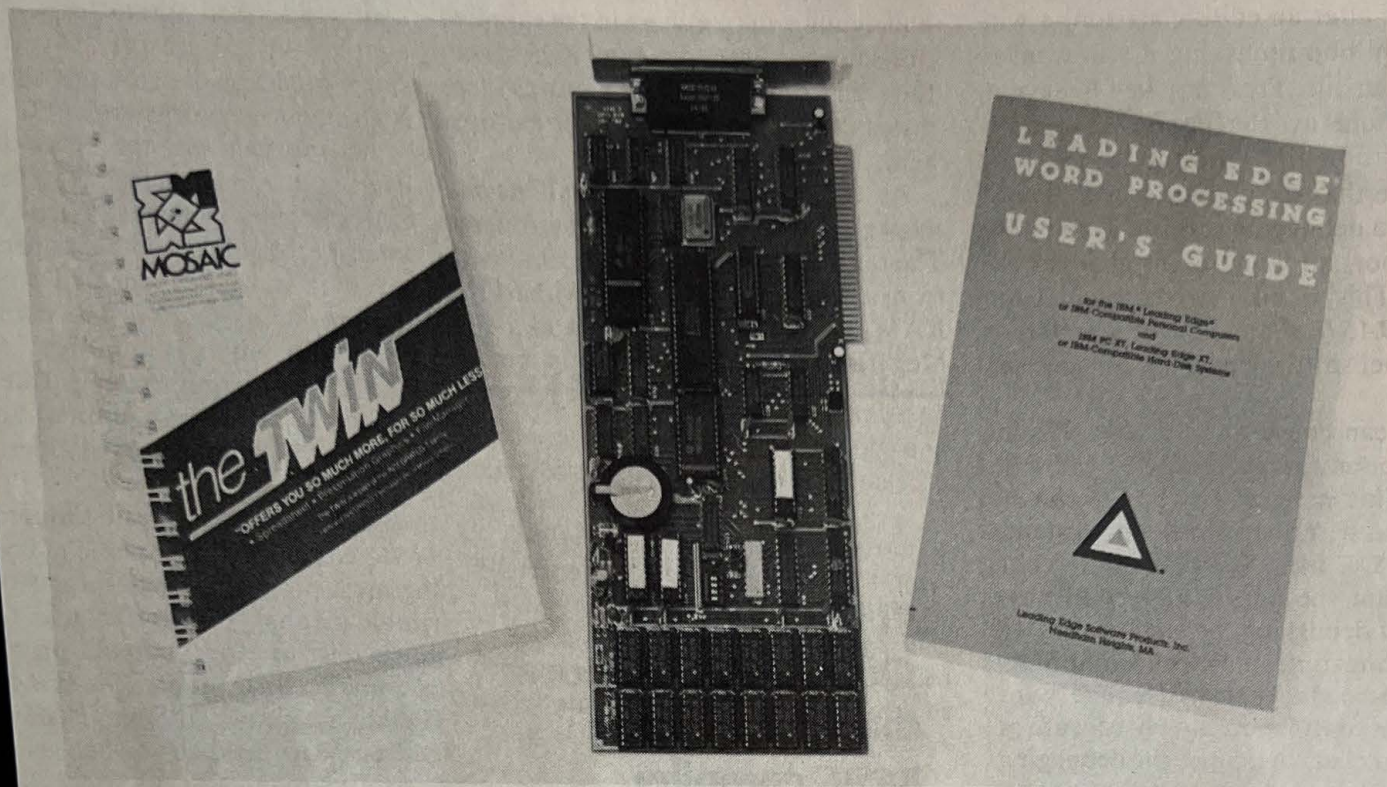
I believe that *QuickBASIC* is more than just another BASIC compiler. *QuickBASIC* is more of a "happening." The situation is similar to that of *Turbo PASCAL* a few years ago. The big difference is that BASIC already has a much larger following than PASCAL, and now that BASIC programmers have a more serious implementation to work with, BASIC will not only remain popular, but is likely to establish an even stronger position as the language of choice among PC users.

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in BASIC, or have been looking at another language because of the limitations of BASIC, take a good look at *QuickBASIC* — I think you will be pleasantly surprised.

(Microsoft Corp., Business Languages Group, 16011 NE 36 Way, Box 97017, Redmond, WA 98073-9717; 206-882-8080, Technical Support Line 206-882-8089, \$99)

— Jim Pile

## SOFTWARE

# Worklog — A Memory-Resident Computer Usage Package

*Worklog* is a memory-resident, automatic-computer-usage-logging program that runs on all PC Compatibles. The requirements are MS-DOS 2.0 or higher, one disk drive and 128K RAM. Memory requirements for the resident portion of the program are 2.7K.

The two *Worklog* programs are designed for individuals or businesses that require a means of tracking the use of their computers. These programs are: Log, which does the actual logging of the computer usage and WLReport, which produces reports on worklogs and provides for the maintenance of the worklogs.

The installation procedure gave me no problems and took only about two minutes. From that point, all sessions were logged with very little interface with *Worklog* required.

Computer usage is logged in units called "sessions." The session covers all activities or groups of activities you want to log as a unit. Information is kept concerning the beginning and ending times of a session, the number of keystrokes entered, a count of disk sectors read and written, and the amount of time the user accumulated in actual use of the computer.

To log a session, run the Log program if it is not installed. Otherwise, everything is automatically started when run from the AUTOEXEC.BAT file. The program asks your name and what you will be working on when the session begins.

*Worklog* has five categories of required information. These are:

- User: Who is using the computer for this session?
- Activity: What type of activity the computer is being used for (e.g., accounting, word processing, etc.)
- Project: Define the project being worked on.
- Use Class: Define the overall class of use of the session. This may be Business, Personal, Job, Investment or Tax.
- Machine ID: Define the machine that the session is logged on.

*Worklog* makes beginning and ending a session very simple and straightforward with only a few keystrokes. In addition, the program "remembers" what was going on last, and only one keystroke is necessary to resume the session.

The second portion of the program is WLReport, which performs two functions. First, it creates reports that detail or summarize the computer usage. The format of the report can be specified easily and the program output can be diverted to a printer, a screen or a disk file.

Secondly, WLReport provides maintenance services for the log file. Maintenance activities include archiving of old session records and removal of old or obsolete project codes and users no longer accessing the system. WLReport allows one to add new codes to the log file or to modify descriptions associated with any code.

Another worthwhile feature of WLReport is the ability to merge files, restore log files that may have been lost or damaged, and to create a new log file when necessary.

I found the report generator to be quite flexible in producing both summary and detailed reports. This is a strong feature of this package.

The manual is well thought out, easy to read, and should present the novice or experienced user with no problems. This program is a *must* for small and large businesses, as well as individuals who require a precise breakdown of computer usage time. This is an exceptional program that does everything promised. I highly recommend the purchase and use of *Worklog*.

(Wyssware, 5207 Ravenna Ave. NE, Seattle, WA 98105; 206-526-0711, \$59.95)

— Edward Champion

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## SOFTWARE

# JingleDisk — A Holiday Card Maker and Greeting Disk

*JingleDisk*, a holiday card maker and animated greeting disk, is the perfect way to wish your fellow computer enthusiasts a happy holiday season.

With *JingleDisk*'s card making feature and a little imagination, you can send cards that have more personal touch. This program offers a wide selection of graphics, and supports an even wider range of printers.

My favorite part, however, is the holiday animation that comes up on-screen when you select the Jingle Tunes option.

The disk can be personalized with your own message to family or friends and copied onto another disk to be sent as a holiday greeting.

One feature of *JingleDisk* that I found unique is that it is a floppy. One side is for use on MS-DOS machines and when you flip it over, it can be used on an Apple //.

*JingleDisk* is also very easy to use. Simply boot your system, put the disk in Drive A and type JINGLE. Small children (and adults) will especially like the simplicity of *JingleDisk*, as the kids will probably want to watch the scenes again and again.

This year, you can put away those Bing Crosby albums that you've used in the past to get in the holiday spirit. *JingleDisk* is much more entertaining and useful!

(Hi Tech Expressions, Inc., 2699 South Bayshore Drive, Suite 1000A, Coconut Grove, FL 33133; 800-848-9273, \$9.95)

— Belinda Kirby

## SOFTWARE

# Open Access II — A Powerful, Integrated Business Package

Those who have been reading SOFT SECTOR for some time may well remember the original review of *Open Access* (in the January '86 issue). At the time we said that this program was the only product we had seen that not only

did an excellent job of integrating practically every business need, but did so in a powerful and easy-to-use way.

These two features, plus the outstanding 3-D graphics, are still the heart of *Open Access*. The program has been strengthened, however, and some excellent features have been added.

We would refer you to the original review for most of the details on *Open Access II*'s spreadsheet, database, graphics, word processor, telecommunications and time management(!) features. The thing that impressed us most at that time — and is still true today — is that *Open Access II* never stinted on what you could do with one module. It started life as an integrated software package and that was, to us, a distinct advantage as it was written to have lots of bells and whistles in its original form. Compare that to a spreadsheet program to which someone added further capabilities to make it "integrated" and you get the picture.

Even in re-review, one should mention the graphics. With the many excellent graphing and graphic-enhancer programs available today (such as *Freelance*), when you're working with a *Lotus* spreadsheet as your source, you are limited with what you could enhance. *Open Access II* gives it all to you right off the bat.

All that being said, the authors of *Open Access II* have gone the original *Open Access* one better in several areas. Most significant is in its database, which is now a fully relational program with a number of additional features, such as goal-seeking. Added, too, is a "language" that uses English-like commands that let you customize applications to your liking. Likewise, the word processor has been improved so you can easily perform mail merge, set up graphic presentations and take information from the spreadsheet or the database and merge it into documents.

Because *Open Access II* was written as an integrated package, all the commands in all the modules are alike (although not particularly like anything you've seen before). Once you've picked up one, you pick up the general scheme behind them all. This makes for fast adaptation to the package.

But, as before, there is something not particularly "officially" touted by Software Products International, the publishers, which catches my eye: a new Desk Accessories module that will pop up on the screen any time you are in *Open Access II*.



This is where the appointment calendar resides now — instead of in its own module — and the convenience of having this “utility” pop up when needed is large. Considering the fact that you can leave *Open Access II* running all day (since it handles most of your business needs) you, in effect, have a memory-resident appointment calendar, too.

What I like best about this “utility” section is the time display. It gives you current time, and time in two other locations of your choice — in either 24-hour or 12-hour format. Because I can never remember what time it is on the West Coast, this is particularly handy for me. And, because I am also a pilot who cannot seem to get the “hang” of converting Zulu time to Eastern, it is a major bonus.

The utilities also have such things as a stopwatch, visual calendar, alarm setup, a value converter (for changing pounds or marks to dollars), a note pad and an electronic rotary name and address file. I happen to think this is a tremendous bonus for this program!

I liked *Open Access* when it first came out, and I like it even more now. To me, it is the Cadillac of the integrated software programs that I have seen and, at a price that is less than other programs in this class, I believe it to be an excellent value as well.

(Software Products International, 10240 Sorrento Valley Road, San Diego, CA 92121; 800-521-3511, in California 800-621-7490, \$595)

— Lonnie Falk

## SOFTWARE

### ACE — A Full House of Utilities

*ACE*, from Prickly-Pear Software, is a very useful collection of DOS tools. There are nine different utilities included in the package: Browse, Change, CHMOD, CP, MSort, MV, Search, Split and UNIQ.

The Browse utility is one of the most useful. With it, you can read in an ASCII file and with the touch of a few keys, scan it from top to bottom, bottom to top, or side to side. Inside the Browse utility are several sub-commands, which allow you to find any part of your file or “step-find” all occurrences of any part of the file. You may go to a particular line number, the top or bottom of the file, get a help menu, and several other nice functions.

Each sub-command may be invoked by at least two different methods so that you may choose the easiest one for you to remember. The only slight drawback I found in Browse is that a large file of many long records reads in slowly. Considering the usefulness of this utility, though, this is a small inconvenience. Shorter files, with shorter records, read in very quickly.

The Change utility will change any occurrence of a word to any other word in any file. You may make the change case-independent or not, by the simple addition of -i in your command line. This utility worked quite well and

performed the case-independent changes as easily as the normal ones. The number of changed words is reported on the screen. Normally, the changes are made just to the so-called standard output — in other words, the screen. The file itself is not altered, but it may be written out to another filename on your disk.

The CHMOD function will change the attributes of any file on your disk. Unless you are using a hard disk, this function is not all that useful, as is mentioned in the instructions. However, it is there and it works.

The CP utility is a copying utility with much more versatility than the standard DOS COPY command. The most useful feature is that you are allowed to enter a list of files to be copied. There are many times I have wanted to do this, so this one was certainly worth having.

The MSort is a sorting utility that allows you to specify the starting column number, the ending column number, and the order in which the file will be sorted. This utility may be set to ignore the Case of the key to be sorted on, which adds to its usefulness. MSort may be used as a filter, just as the normal SORT on your DOS Disk.

The MV function allows you to move files between directories and allows renaming of files across subdirectory boundaries, or from one disk drive to another. This utility, like CHMOD, will be more useful to those of you lucky enough to be working with a hard disk.

The Search utility performed well, finding all occurrences of anything that I searched for in a file. The only prob-

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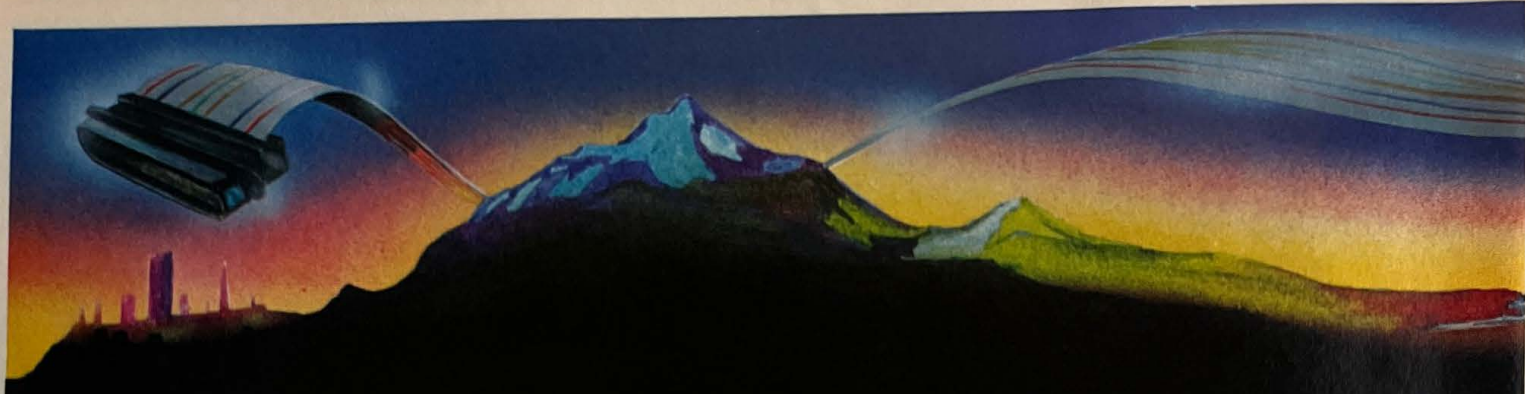
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# DELPHI

TYPE:  
GROUP MS DOS





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## How to reach the MS-DOS SIG on Delphi . . .

There are several ways to connect to Delphi and SOFT SECTOR's MS-DOS SIG. In most cities you will not even have to pay long distance charges; you can use special data communications networks, like Telenet, Tymnet and the Canadian Datapac network.

First, set your terminal program to operate at either 300 or 1200 Baud (depending on the modem you have), and also select either 7 bits with even parity or 8 bits with no parity, and one stop bit. (If one combination doesn't work, try another.)

Decide which network you should use. There is no surcharge for Telenet or Tymnet. Canadian residents using Datapac will be charged an additional \$12 (U.S.) per hour.

**On Telenet:** The Uninet network has now merged with Telenet. To get the Telenet number for your area, call (800) 336-0437. After you call your local access number and make connection, press the ENTER key twice. When the "TERMINAL=" prompt appears, press ENTER again. When the "@" prompt appears, type C DELPHI and press ENTER.

**On Tymnet:** Call (800) 336-0149 to get the Tymnet number for your area. After you dial your designated number and make connection, simply press 'A' no matter what appears on the screen. When "please log in:" appears, type DELPHI and press ENTER.

**From Canada (on Datapac):** Call Delphi Customer Service at (617) 491-3393 to get the Datapac number for your area. After you connect, press the period key (.) and ENTER (use two periods if you're using 1200 Baud). Type SET 2:1, 3:126 and press ENTER. Now type p 1 3106, DELPHI; and press ENTER. Delphi's new rates indicate an additional \$12 hourly surcharge for evening use of Datapac, which means a total of \$18 (U.S.) for connect time.

**From other countries:** Many countries have their own data networks that can connect to either Telenet or Tymnet. Check with the telephone authorities in your country for details on how to sign up for this service. When you have an account set up, you can reach Delphi with a "host code" of 311061703088 through Telenet, or 310600601500 through Tymnet. (You'll have to pay the toll charges for this connection.)

### Type in Your User Name

If you're already a subscriber to SOFT SECTOR, at

the "USERNAME:" prompt, type SOFTSECTORSU and press ENTER. At the "PASSWORD:" prompt, type your individual subscription number from the mailing label of your latest issue of SOFT SECTOR. (If there are one or more zeros at the beginning of this number, include them.)

**If you don't already have a subscription,** at the "USERNAME:" prompt, type SOFTSECTOROR and press ENTER. At the "PASSWORD:" prompt, type SENDSUB and press ENTER. Have your MasterCard, VISA or American Express card ready, because you'll be led through a series of questions that will enable us to put your SOFT SECTOR and Delphi subscriptions into effect. In an effort to hold down non-editorial costs, we do not bill for subscriptions.

If you make a typing error, just press ENTER and start over. Remember that at any point, when you're on Delphi, you can type HELP to get help on how to use the system. To get off the system just type BYE.

If you find that you're unable to log onto Delphi and enter the MS-DOS SIG after following these instructions, call us during afternoon business hours at (502) 228-4492. We'll be glad to offer assistance.

### Come Visit Us! Type: GROUP MSDOS

After you sign in, you'll be prompted to set up your own, personal "user name" — Delphi is a friendly service, no numbers to remember — and you'll be asked a number of questions so Delphi can set up your account. You'll also be assigned a temporary password. No time is assessed against your free hour of service while you answer these questions.

Delphi will tell you that your account will be ready after 6 p.m. the same day if you sign up before noon (Eastern time zone.) If not, your account will be ready at 6 p.m. the next day. Once an account is opened, *each SOFT SECTOR subscriber will be credited with an hour of free time!*

When you log back in, use your chosen user name and your temporary password to access the system. At that point, you will meet Max, who will help you configure things and will change your temporary password into your own *personal* password. This is the password you will use for subsequent sessions — or until you change it.

After Max bids you goodbye, you'll wind up at the Delphi Main Menu; type in GROUP MSDOS and **join us on the MS-DOS SIG!**



lem I found with this module was that, sometimes, on the Sanyo 555 without the Video RAM Board, it would not search through more than one file as the manual specifies. However, in all fairness, I tried this on my Tandy 1000 and it performed just as specified, so I called Prickly-Pear Software. Within a couple of days, I was furnished with a new disk which performed flawlessly. This utility also may be set to allow case-independent searches. You can search through several files for whatever you like, and then with re-direction write the resulting file to disk under a new name (e.g., `SEARCH -f Joe B:*. * > NEW-FILE.DAT`. This will find all occurrences of "Joe" and write them out to the file called `NEWFILE.DAT`. (The `-f` is a switch to prevent the filenames you are searching from appearing in the resulting file). Search will also support the use of "wild cards" in its search, making it a very powerful utility, and one of the most useful on the disk.

The Split utility is especially useful if you have large files. By simply typing `SPLIT -50 filename.ext`, it will write to disk as many files as necessary, (up to 999, according to the manual) each containing 50 records. Then you may work on these files in smaller "hunks," and combine them when you have finished, with the `DOS COPY` command. The files created on disk are automatically created using the original filename, with an identifying extension of `.001`, `.002`, `.003`, etc. This makes them easy to identify and work with. Any size split may be performed by changing the number in the command line.

The last utility, `UNIQ`, will strip from your files any duplicate entries, whether your file is sorted or not. This is a powerful function, and though it may not be needed very often, it's nice to know you can do it if you find it necessary. Results of the stripping process may also be saved to disk using the normal redirection `UNIQ FILE1.EXT > FILE2.EXT`.

About the only fault I have to find with this set of utilities, is with the rather skimpy documentation. The manual has most all the necessary instructions for the experienced programmer, but I feel sure that many of those who will be using it would appreciate a little more detailed information. The author is obviously a whiz at programming, but sometimes these authors are so familiar with their work they forget the rest of us aren't as proficient as they. So please, let's have a little better manual to go

with fine utilities like these. Still, all in all, this is a good set of utilities. Even if you have no use at all for some of them, others are likely to be just what you're looking for.

(Prickly-Pear Software, 213 La Mirada, El Paso, TX 79932; 915-584-7784, \$34.95)

— Max S. Worthington

## SOFTWARE

### Second Screen Driver — Seeing Double Can Be Good for Your Health

How many times have you been blazing away in *WordStar* or *CalcStar* only to find that you have forgotten a command sequence? If you're like me you'll press the help key, wait for the menu to appear and find the command code you need. By this time, I've usually forgotten what I wanted it for and spend more time getting all fired up again.

*Second Screen Driver* by Alberto Pasquale lets your Sanyo 555 with a Video RAM Board display two screens at the same time. This 1,200-byte, memory-resident utility redirects the output normally sent to the printer to the Sanyo video. It also sets up interrupts so you can use the `CONTROL-PF1` through `PF5` keys to direct the information from the video board screen to the Sanyo video. I used the MS-DOS screen dump keys (`CONTROL-SHIFT-INS`) to transfer the *WordStar* help screen from the video board screen to the second display. This way I did not have to wait for the overlay to load in. It is a lot faster than a RAM disk because you copy the screen once and it's there for instant reference, and doesn't require nearly as much memory.

Mr. Pasquale has done his work well. The user's manual is clean, easy to follow, and clear in its instructions. He has developed a very tight and efficient assembler program that exploits the potential of the Sanyo 555 with the Video RAM Board. One could design a system that displays the instructions on one screen while processing data on the other. All the Sanyo's video graphics capabilities are there, so a spreadsheet

could be designed to calculate on the video board and display the computed graph in Sanyo graphics. Think of the games that could be developed using two displays.

The only drawback I found on my system (a Silver Fox from Scottsdale Systems), is that the *Second Screen Driver* does not work with either Mich-Tron's *DS-DOS Plus* or A-OK's *A-OK DOS-4* on the quad-density drives in my computer. However, I found no problems with the standard MS-DOS 2.11 VB operating system when I installed the `SSD.COM`.

The manual recommends 256K of memory in the system, but if you want to take the time to enter an assembler program, Mr. Pasquale has included a complete assembler listing of the program in the manual. All that would be needed would be to change the constant for the green screen location, re-assemble, link and install, to use with less than 256K. To see the output, you'll need either a second monitor or a video switch for one monitor.

This utility is inexpensive and is not copy protected. It is compact and fast, and is one that should be included with every copy of the Sanyo Video RAM Board MS-DOS. Its potential is yet to be tapped.

(Alberto Pasquale, 7115 Greenbriar #8, Houston, TX 77030, \$30)

— James G. Yearwood

## SOFTWARE

### Sanyopoly — Computer Fun at Its Best

*Sanyopoly* is a Sanyo 555 version of the all-time favorite board game, Monopoly®, and was written by Leonard Hyre, a regular *SOFT SECTOR* contributor.

To run *Sanyopoly*, your computer must have at least one drive and 256K memory. A color monitor is nice, but not necessary.

Two people or even two teams can play. There is not much difference between *Sanyopoly* and Monopoly, but *Sanyopoly* allows a much quicker



game. The properties, however, are distributed at random.

The graphics are excellent. I have seen many versions of Monopoly and this one has the best graphics by far.

*Sanyopoly* has some other options too; since your money and properties are not in front of you as in the board game, the computer takes care of all that for you. In the middle of the screen, *Sanyopoly* tells you whose turn it is and how much money each player has. It will show you the properties you own, and will give you a printout of those properties if you want.

All available options are shown in a menu in the middle of the onscreen "board." The options listed in that menu are: Buy, Assets, Improve, Trade, Mortgage, Unmortgage, Summary and Next. These are all single-letter commands.

The documentation is very good and the explanation of the rules is excellent. Another good point about the documentation is that it explains how to create an AUTOEXEC.BAT file to run *Sanyopoly* on boot up. The documentation also gives its own definitions to words in the game. For example, the

menu choice Improve means you are given a chance to build houses on your property to make it more valuable. Not only is the documentation clear and concise, it is written with a touch of humor — something not often found in documentation.

I like *Sanyopoly* and recommend it to anyone who is fond of Monopoly. It also has the advantage of providing a quick game when you don't have three or four hours to spare.

(Michigan Software, 43345 Grand River, Novi, MI 48050; 313-348-4477, \$29.95)

— Michael Pile

## SOFTWARE

### PC Tools — A Tool Box for Your PC

*PC Tools* is a resident DOS utility that is designed to work with the IBM PC and compatibles. If you want to keep *PC Tools* "resident" in memory

while other programs are running, it's a good idea to have 256K or more. You need only one disk drive, though it works well with multiple drives, including hard disks and RAM disks.

The program is advertised as being compatible with all other resident programs such as *Prokey* and *Sidekick*. I used it with *Sidekick* and had no problems. You must load *PC Tools* first, or the program will let you know that *Sidekick* is installed and will not allow you to load *PC Tools*.

*PC Tools* is not copy protected and you can make a backup using the *PC Tools* Copy Disk option or the DOS COPY command.

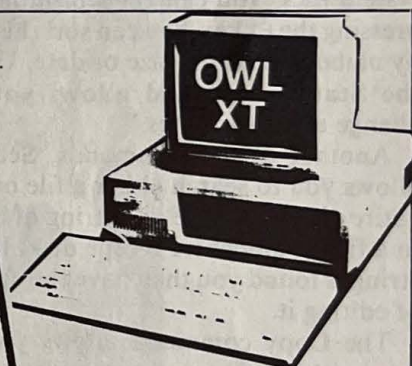
A 68-page manual, included with the program, provides all the information anyone would need to use this program. However, the program is menu driven and you will seldom need to consult the manual.

*PC Tools* can be installed as a resident program (you need to set aside at least 128K of memory for the program and memory buffers), can be set to display either color or black and white, and you can select the key used to activate *PC Tools* if installed as a

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resident program. One of the advantages of having *PC Tools* resident in memory would be, for example, if you were working on a word processor document and suddenly realized that you don't have a disk available on which to save the file. Without *PC Tools* you would have to exit the word processor (thus losing the document you were working on), format a new disk from DOS, reload the word processor, retype the text, and then save the file. With *PC Tools* in memory, however, just press CONTROL-ESCAPE, start the program, use the FORMAT command to format a new disk, exit *PC Tools* back into your word processing program, and save your text.

If you use CONTROL-ESCAPE for some other purpose, you can change the key to use any of the function keys.

When the *PC Tools* menu appears onscreen, use the up- and down-arrow keys to select the option you want.

After selecting a directory and choosing the drive, you will see a listing of the root directory (or subdirectories if they exist), with the name, extension, size, date the file was last changed, and the time plus any "attributes" of the file. The directory will display all hidden and system files. You can get a printout by pressing the F1 key. You can sort the files by name, extension, size or date. Using the Status command allows you to change any "attributes."

Another of the commands, Search, allows you to search either a file or the entire disk for a byte or a string of bytes in a file or anywhere on the disk. If the string is found you then have the option of editing it.

The Copy command allows you to copy either a file or the complete disk. You can then use the Compare file option to compare two files to see if they are identical. You can also Rename a file or Delete a file. If you made a mistake you can Undelete a file. You can View a file and/or Edit a file. The Mapping option lets you see which sectors of a disk are used by which file and which sectors are free for use.

Everything I tried (and I tried everything) worked as expected. This would be a very good program to have after you have the programs you require, or if you want to examine your disks without going to a "zap" program.

After I completed this review I had occasion to format a disk that had a bad sector. As you know, the DOS FORMAT command makes the entire track that contains a bad sector unavailable. *PC*

*Tools* marks only the sectors that are bad as unavailable. (I normally try not to use a disk with any bad sectors at all.) I then tried to format a new disk, and after it was completed *PC Tools* indicated that it also had a bad sector. In fact, until I rebooted the program, every disk I tried to format reported a bad sector. A call to Central Point Software revealed that this bug had already been taken care of, and that the most current version without this bug is *PC Tools* 2.02. The version provided for this review was 1.1 and is almost a year old. The version number is not listed on the package that I have, so be careful that you don't buy an old release.

(Central Point Software, Inc., 9700 SW Capitol Highway, Suite 100, Portland, OR 97219; 503-244-5782, \$39.95)

— John Spataro

## SOFTWARE

### *Turbo Tutor — An In-Depth Look at Turbo Pascal*

*Turbo Tutor* consists of a 408-page book and two disks that give a concise and thorough introduction and review to using the *Turbo PASCAL* program. The programs included on the disks will run on all PC Compatibles, MS-DOS 2.11 Sanyo machines, and even on CP/M machines. This book is not intended to replace the reference manual that comes with *Turbo PASCAL*, but is instead meant to stress the principles of PASCAL in general and *Turbo PASCAL* in particular. In addition to the disks included with *Turbo Tutor*, you will need a copy of *Turbo PASCAL* Version 3.0 or later.

The first six chapters of the book cover the basics of computer usage and *Turbo PASCAL*. The user, at this point, should be able to write simple programs from the editor and subsequently be able to compile and run these programs. This section of the book is a good review for the experienced user who may not use the program regularly. The remainder of the book concentrates on the design and implementation of user-written *Turbo PASCAL* programs.

Chapter 7 defines the basic concepts of PASCAL and stresses the understand-

ing of particular terms necessary for the correct implementation of PASCAL programs, while Chapter 8 provides a review of the rules that govern the structure of a PASCAL program. Chapter 9 provides definitions of predefined data types in *Turbo PASCAL*, including integer, byte, real, Boolean and character.

Chapter 10 gives definitions and examples of scalar type (a user-defined range of values and a user-defined order), and Chapter 11 discusses PASCAL control structures IF, GOTO, FOR, WHILE, etc. Chapter 12 outlines the general concept of subprograms and the parameters necessary for the subprograms to function correctly, and Chapter 13 continues with a discussion of arrays and the implementation of arrays in programs. When you get into Chapter 14, you'll learn how to use strings in *Turbo PASCAL* programs, which will be followed by a discussion on the use of records as opposed to arrays and strings in Chapter 15. Chapter 16 explains the creation and use of sets.

Chapter 17 defines and explains the use of pointers. A pointer is a variable used to record the address in memory of a dynamically created data object, while Chapter 18 outlines the use of files and provides a discussion of *Turbo PASCAL*'s I/O procedures. Chapter 19 is a summary chapter and provides you with useful, sample programs to reinforce the concepts from the previous chapters.

Chapters 20 through 28 cover many advanced topics of programming with *Turbo PASCAL*. The topics cover a wide variety of subjects from assembling large programs to using 8088/8086 assembly language with *Turbo PASCAL*.

In using the manual and tutorial disks, I found this software package particularly easy to use and understand. During the time allotted for this review, I gained a much improved understanding of *Turbo PASCAL*. Consequently, my existing PASCAL programs (having been rewritten) are more efficient and more logical in their structure.

I highly recommend this tutorial for the novice to use in addition to the standard *Turbo PASCAL* manual, and to the experienced *Turbo PASCAL* user as a reference text.

(Borland International, 4585 Scotts Valley Drive, Scotts Valley, CA 95066; 408-438-8400, \$39.95 plus \$5 S/H)

— Edward Champion

SS



# Print Set

By Charles A. Haven

If you print a lot of source code, reports or just document files, I have a program you may find very useful. I am just lazy enough to always be looking for an easier, more convenient way of doing things. And, as I am a college student, I find myself printing out a lot of reports and source code on my computer and Star SG15 printer. Therefore, I decided I should begin using batch files to ease my work load.

I had been using BASIC and short programs to change my printer modes from condensed to pica to elite for different printing jobs, not to mention initializing the printer for margins and skipping over perforations.

When I saw an advertisement for Microsoft's new *QuickBASIC* compiler for under \$100 I immediately purchased a copy. I had wanted a BASIC compiler ever since I bought my computer, but couldn't afford one. This is a



great one; I can recommend it to anyone who wants faster programs or greater capabilities.

The program I have written is simple and straightforward. First, the program sets up two arrays; one is a string array and is used for generating a help screen, and the other is an integer array that holds the printer control codes I decided to support. In lines 170 through 260 the arrays are declared and are loaded with READ statements, which makes it easy for anyone who has a different printer or wants to support different mode changes to change these DATA statements as needed. I used the integer 255 as a flag value so I could send printer codes of different lengths to the printer. When 255 is encountered, the program knows that the transmission to the printer is complete.

The second part of the program (lines 270 through 290) returns the parameter list from the command line of the operating system. If the parameter list is empty, the program assumes the user needs assistance and prints a help menu onscreen with an example (Line 290). If there are parame-

*Charles Haven is a professional firefighter and is presently attending college to obtain degrees in computer science and business administration. He enjoys programming in PASCAL, BASIC and COBOL, and may be contacted at 1616 Utica-Sellersburg Road, Jeffersonville, IN 47130-9437.*



ters returned, the program calculates the length of the list and loops through the processing module until it reaches the end of the list, at which time the program terminates.

To determine which printer codes to send to the printer, the program reads a character from the parameter list, converts it to an integer, and calculates an array subscript with it. This is accomplished in lines 300 through 330.

To build this program, first fire up your trusty word processor that produces a pure ASCII file, type in the listing and save it with the name PRTSET.BAS. You then need to load the *QuickBASIC* disk in Drive A and type in BASCOM/0 at the system prompt. This invokes the compiler with the /0 compiler switch that causes the compiled program to be linked with the stand-alone run time library, rather than needing the run time module on the disk to use this program. The compiler will prompt you for the source code program's name, you put the disk with the source code on it into Drive B and type B:PRTSET. The compiler will offer a name for the object file it produces, which we will change by typing B:PRTSET.OBJ. Now the compiler will ask you for a name for a listing file. If you accept the default of NUL.LST, a listing will not be produced, but if you

would like a listing type in B:PRTSET.LST.

The compiler now begins its job. If you have typed the source code in without any errors it will compile with zero warning errors and zero severe errors in about 30 seconds.

You are now ready to link your object module. Make sure you have LINK.EXE and BCOM10.LIB in Drive A and type LINK. You will be prompted for the object module name, which you type in as B:PRTSET.OBJ. You will be offered the default program name, but instead type in B:PRTSET.EXE. It will ask for a map name, if you accept the default of NUL.MAP, none will be produced. If you want one, type B:PRTSET.MAP. Now you will be asked for the name of the libraries to be used. Simply press ENTER because we declared the proper library when we invoked the compiler with the /0 switch. Congratulations, you have just produced PRTSET.EXE.

When writing this article, I thought that many computer users would be more likely to have the very popular *Turbo PASCAL* than *QuickBASIC*. Therefore, I have written a *Turbo PASCAL* version of this program to include in this article. You need *Turbo PASCAL* Version 3.0 or greater to be able to compile this program, as it has a couple of pre-defined functions not

included in Version 2 that allow it to return the command line from the system. It has very similar logic and operates virtually identically to the BASIC version.

### COMPATIBILITY PROFILE

- The two versions of *PrintSet* were written with the Microsoft *QuickBASIC* compiler (Listing 1) and the *Turbo PASCAL* compiler (Listing 2). Both versions compile and run properly on all PC Compatibles, including the Sanyo 550/555 system with the Video RAM Board.
- For those who do not have either of these language compilers, Listing 1 will run in the GW-BASIC interpreter on all systems by making the following program changes:

```
Change Line 390 to read INPUT
"Enter Code ";COMMAND$
Add Line 395: 395 IF COMMAND$<"@"
OR COMMAND$>"Z" THEN END
ELSE GOTO 270
```

- The BASIC version of *PrintSet* will not run in the Sanyo BASIC interpreter on the standard Sanyo 550/555 system, nor will the compiled version of the program. However, the compiled version of the PASCAL listing will run properly.

#### Listing 1: PRTSET.BAS

```
10 OPTION BASE 1 : CLS
20 '***** CREDIT HEADING *****
30 '*****
40 ' * *
50 ' * PRTSET c 3-5-1986 *
60 ' * *
70 ' * Written by: Charles A. Haven *
80 ' * *
90 ' * Permission given to use this program *
100 ' * for personal use ONLY. *
110 ' * *
120 ' * Written March 5,1986 *
130 ' * *
140 ' *****
150 PRINT "*** BE SURE PRINTER IS ON LINE ***"
160 '***** INITIALIZE PROGRAM *****
170 REM $STATIC
180 DIM Z(27,7), E$(20) ' ARRAY Z CONTAINS PRINTER CODES
190 ' ARRAY E$ CONTAINS MESSAGE STRINGS
200 RESTORE 410
210 FOR I=1 TO 20 : READ E1$ : E$(I)=E1$ : NEXT I 'LOADS MESSAGE ARRAY FROM DATA
220 ' STATEMENTS STARTING AT 410
230 RESTORE 650
240 FOR I=1 TO 27 'LOADS PRINTER CODE ARRAY FROM DATA STATEMENTS STARTING AT 650
250 FOR J=1 TO 7 : READ Z1 : Z(I,J)=Z1 : NEXT J
260 NEXT I
270 A$=COMMAND$ 'RETURNS PARAMETER LIST FROM THE COMMAND LINE*****
280 B$=MID$(A$,1,1)
```



```

290 IF B$="" THEN GOTO 380 'IF BLANK PRINT HELP MENU
300 FOR I=1 TO LEN(A$) ' PROGRAM LOOP TO PROCESS PARAMETER LIST*****
310 B$=MID$(A$,I,1) : C=( ASC(B$) - 63 ) 'COMPUTES ARRAY ADDRESS
320 J=0 : K=1
330 WHILE J<255 ' LOOP TO SEND PRINTER CODES TO PRINTER UNTIL FLAG VALUE (255)
340 LPRINT CHR$(Z(C,K)); : J=Z(C,K) : K=K+1 ' IS ENCOUNTERED
350 WEND
360 NEXT I
370 END '*****PROGRAM TERMINATES HERE *****
380 FOR I =1 TO 20 : PRINT E$(I):NEXT I 'PRINTS HELP MENU*****
390 GOTO 370 'GOTO PROGRAM TERMINATION
400 REM BEGINNING OF SCREEN HELP DATA
410 DATA " "
420 DATA *** BE SURE TO USE CAPITALS IN THE PARAMETER LIST ***
430 DATA " "
440 DATA A=EXPANDED PRINT N=NEAR LETTER QUALITY
450 DATA V=CANCEL EXPANDED/CONDENSED O=CANCEL NEAR LETTER QUALITY
460 DATA C=CONDENSED PRINT T=SET TOP MARGIN (5)
470 DATA E=ELITE PRINT B=SET BOTTOM MARGIN (5)
480 DATA P=PICA PRINT Q=CANCEL TOP/BOTTOM MARGINS
490 DATA S=SUPERSCRIPT L=SET LEFT MARGIN (5)
500 DATA K=CANCEL SUPER/SUBSCRIPTS R=SET RIGHT MARGIN (5)
510 DATA G=PROPORTIONAL PRINT U=RING BELL
520 DATA H=CANCEL PROPORTIONAL PRINT F=FORM FEED
530 DATA D=DOUBLE STRIKE W=6 LINES/INCH 60 LINES/PAGE
540 DATA I=CANCEL DOUBLE STRIKE X=8 LINES/INCH 80 LINES/PAGE
550 DATA M=EMPHASIZED PRINT Y=9 LINES/INCH 90 LINES/PAGE
560 DATA J=CANCEL EMPHASIZED PRINT Z=16 LINES/INCH 166 LINES/PAGE
570 DATA " @= RESET THE PRINTER "
580 DATA " "
590 DATA"EX: PRTSET EX ---THIS WOULD GIVE YOU ELITE PRINT @ 8 LINES/INCH"

```

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```

600 DATA " "
610 DATA " "
620 DATA " "
630 DATA " "
640 REM BEGINNING OF PRINTER CODES
650 DATA 27,64,255,0,0,0,0
660 DATA 27,87,1,255,0,0,0
670 DATA 27,78,5,255,0,0,0
680 DATA 15,255,0,0,0,0,0
690 DATA 27,71,255,0,0,0,0
700 DATA 27,66,2,255,0,0,0
710 DATA 12,255,0,0,0,0,0
720 DATA 27,112,1,255,0,0,0
730 DATA 27,112,0,255,0,0,0
740 DATA 27,72,255,0,0,0,0
750 DATA 27,70,255,0,0,0,0
760 DATA 27,84,255,0,0,0,0
770 DATA 27,77,5,255,0,0,0
780 DATA 27,69,255,0,0,0,0
790 DATA 27,66,4,255,0,0,0
800 DATA 27,66,5,255,0,0,0
810 DATA 27,66,1,255,0,0,0
820 DATA 27,79,255,0,0,0,0
830 DATA 27,81,5,255,0,0,0
840 DATA 27,83,0,255,0,0,0
850 DATA 27,82,5,255,0,0,0
860 DATA 7,255,0,0,0,0,0
870 DATA 27,87,0,18,255,0,0
880 DATA 27,50,27,78,6,255,0
890 DATA 27,48,27,78,8,255,0
900 DATA 27,65,8,27,78,9,255
910 DATA 27,51,9,27,78,10,255
    
```

### Listing 2: PRTSET.PAS

```

PROGRAM PRTSET(INPUT,OUTPUT,LST);

TYPE MENUARR=ARRAY[1..27] OF PACKED ARRAY[1..30] OF CHAR;

VAR  I                : INTEGER;
     PARAMLIST        : STRING[14];
     CH               : CHAR;

(*****)

PROCEDURE MENU;

VAR SELECTION_MENU    : MENUARR;

BEGIN
    (* MENU *)
    SELECTION_MENU[1] := 'A-EXPANDED PRINT
    SELECTION_MENU[2] := 'V-CANCEL EXPANDED/CONDENSED
    SELECTION_MENU[3] := 'C-CONDENSED PRINT
    SELECTION_MENU[4] := 'E-ELITE PRINT
    SELECTION_MENU[5] := 'P-PICA PRINT
    SELECTION_MENU[6] := 'S-SUPERSCRIPIT
    SELECTION_MENU[7] := 'K-CANCEL SUPERSCRIPIT
    SELECTION_MENU[8] := 'G-PROPORTIONAL PRINTING
    SELECTION_MENU[9] := 'H-CANCEL PROPORTIONAL
    SELECTION_MENU[10] := 'D-DOUBLE STRIKE
    SELECTION_MENU[11] := 'I-CANCEL DOUBLE STRIKE
    SELECTION_MENU[12] := 'M-EMPHASIZED PRINTING
    SELECTION_MENU[13] := 'J-CANCEL EMPHASIZED PRINTING
    SELECTION_MENU[14] := '@-RESET THE PRINTER
    SELECTION_MENU[15] := 'N-NEAR LETTER QUALITY
    SELECTION_MENU[16] := 'O-CANCEL NEAR LETTER QUALITY
    SELECTION_MENU[17] := 'T-SET TOP MARGIN (5)
    
```



```

SELECTION_MENU[18]:='B=SET BOTTOM MARGIN (5)';
SELECTION_MENU[19]:='Q=CANCEL TOP/BOTTOM MARGIN';
SELECTION_MENU[20]:='L=SET LEFT MARGIN (5)';
SELECTION_MENU[21]:='R=SET RIGHT MARGIN (5)';
SELECTION_MENU[22]:='U=RING PRINTER BELL';
SELECTION_MENU[23]:='F=FORM FEED';
SELECTION_MENU[24]:='W=6 LINES/INCH 60 LINES/PAGE';
SELECTION_MENU[25]:='X=8 LINES/INCH 80 LINES/PAGE';
SELECTION_MENU[26]:='Y=9 LINES/INCH 90 LINES/PAGE';
SELECTION_MENU[27]:='Z=16 LINES/INCH 166 LINES/PAGE';
CLRSCR;
GOTOXY(1,5);
FOR I:=1 TO 13 DO
  WRITELN(SELECTION_MENU[I],SELECTION_MENU[I+14]);
  WRITELN(' ',SELECTION_MENU[14]);
  WRITELN(OUTPUT);
  WRITELN('EX: PRASET EX ---THIS WOULD GIVE YOU ELITE PRINT AT 8 LINES PER INCH');
END;
(* MENU *)

```

(\*\*\*\*\*)

```

BEGIN (* MAIN *)
  PARAMLIST:=' ';
  I := 1;
  IF PARAMCOUNT=0 THEN
    MENU
  ELSE
    BEGIN
      PARAMLIST:= PARAMSTR(1);
    END;
  WHILE (PARAMLIST[I]<>' ') AND (I<15) DO
    BEGIN

```

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CASE UPCASE(PARAMLIST[I]) OF

```
'@': WRITE(LST,CHR(27),CHR(64));
'A': WRITE(LST,CHR(27),CHR(87),CHR(1));
'B': WRITE(LST,CHR(27),CHR(78),CHR(5));
'C': WRITE(LST,CHR(15));
'D': WRITE(LST,CHR(27),CHR(71));
'E': WRITE(LST,CHR(27),CHR(66),CHR(2));
'F': WRITE(LST,CHR(12));
'G': WRITE(LST,CHR(27),CHR(112),CHR(1));
'H': WRITE(LST,CHR(27),CHR(112),CHR(0));
'I': WRITE(LST,CHR(27),CHR(72));
'J': WRITE(LST,CHR(27),CHR(70));
'K': WRITE(LST,CHR(27),CHR(84));
'L': WRITE(LST,CHR(27),CHR(77),CHR(5));
'M': WRITE(LST,CHR(27),CHR(69));
'N': WRITE(LST,CHR(27),CHR(66),CHR(4));
'O': WRITE(LST,CHR(27),CHR(66),CHR(5));
'P': WRITE(LST,CHR(27),CHR(66),CHR(1));
'Q': WRITE(LST,CHR(27),CHR(79));
'R': WRITE(LST,CHR(27),CHR(81),CHR(5));
'S': WRITE(LST,CHR(27),CHR(83),CHR(0));
'T': WRITE(LST,CHR(27),CHR(82),CHR(5));
'U': WRITE(LST,CHR(7));
'V': WRITE(LST,CHR(27),CHR(87),CHR(0),CHR(18));
'W': WRITE(LST,CHR(27),CHR(50),CHR(27),CHR(78),CHR(6));
'X': WRITE(LST,CHR(27),CHR(48),CHR(27),CHR(78),CHR(8));
'Y': WRITE(LST,CHR(27),CHR(65),CHR(8),CHR(27),CHR(78),CHR(9));
'Z': WRITE(LST,CHR(27),CHR(51),CHR(9),CHR(27),CHR(78),CHR(10));
```

END;

I:=I+1;

END;

END. (\* MAIN \*)

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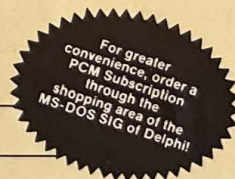
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Few topics have generated as much interest among users of microcomputers in recent years as the C programming language. Numerous software companies are turning to C when writing new products or porting existing products to a new machine. Likewise, C is being considered a "must-learn" language on numerous college campuses; according to an article in *PC Week*, "... C is the language of choice of many computer science instructors across the country." C has also received much attention in the world of computer journals: *PC Magazine* has done a cover story on C; many programming journals, such as *Dr. Dobbs' Journal*, run regular columns on C.

So, you may ask yourself: "Why all the fuss? What is so special about C? More important, is it worth my while to learn how to program in C?" To answer these questions, *SOFT SECTOR* is running a two-part article on C. This month's article describes the C language, what it can do, and its strength and weaknesses. Next month I will present a mini-tutorial on how to program in C.

#### What Is a Computer Language?

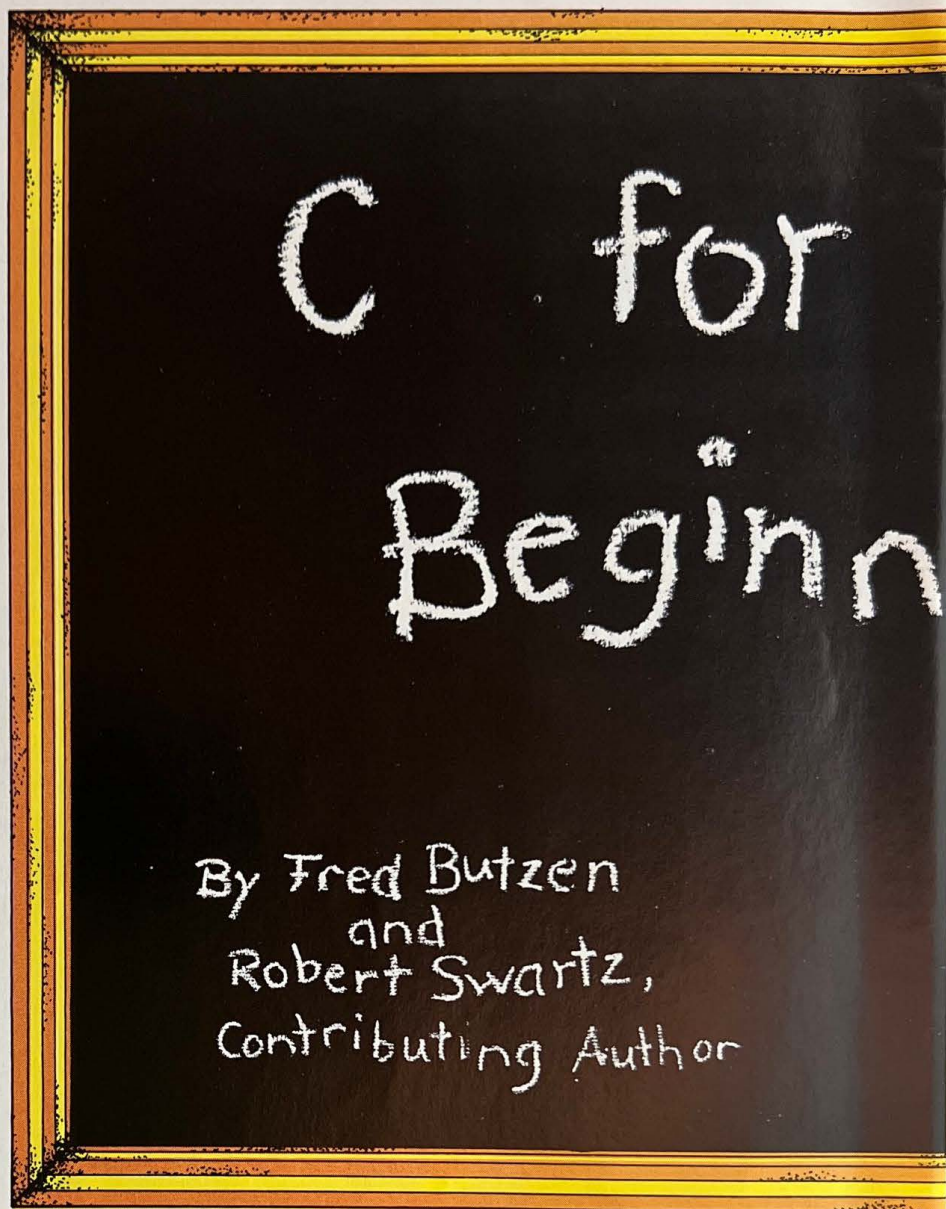
Before beginning with C, we'll quickly review how a microprocessor and a computer language works.

A microprocessor has a built-in set of commands. A command may tell the computer to add two numbers together, to store the result of an arithmetic operation in RAM, or copy data from one point in RAM to another. Together, a microprocessor's commands form its instruction set. The instruction set is, in effect, the microprocessor's "native" language.

A microprocessor also has a built-in group of tiny "adding machines," called registers. The registers perform the work, the arithmetic and data handling within the microprocessor; they determine how much RAM a microprocessor can handle and how it handles data.

A computer language, as the name

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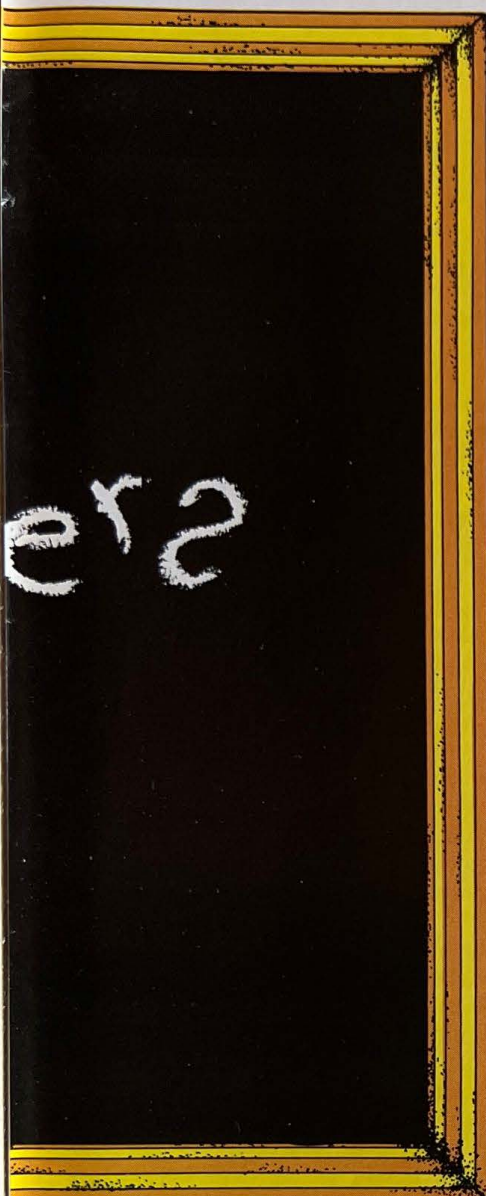
implies, lets the user "talk" to the microprocessor. Languages come in different "levels," depending on how close they come to the microprocessor's instruction set.

The lowest level language is called assembly language. In assembly language, the programmer specifically calls instructions from the microcomputer's instruction set, and specifically manipulates the registers within the microcomputer. To write programs in assembly language, a programmer must have a detailed knowledge of how the microprocessor works. Because the programmer can tailor the program specifically to the microprocessor, programs written in assembly language generally are smaller and run faster than pro-

grams written in a higher-level language. However, because each microprocessor has a unique instruction set and a unique bank of registers, a program written in one microprocessor's assembly language cannot be ported to another microprocessor. For example, no program written in Z80 assembly language for a CP/M computer can be ported to the IBM PC or any PC-compatible computer.

A high-level language is a language in which the programmer writes a set of logical constructs; these logical constructs are then handed to another program that transforms them into the microprocessor's instructions and registers. Using a high-level language means that the programmer need not have a





too, the programmer may be blocked from using certain powers available in a particular microprocessor. Also, the programmer is bound to the software that translates his program to the microprocessor; if the software is inefficient or if it has bugs, the programmer is helpless.

A high-level program is either "interpreted" or "compiled." With an interpreted program, the software (interpreter) takes the program and turns it into instructions, line by line.

With a compiled language, the program is passed en masse to a compiler, which turns the program all at once and writes a file of machine instructions. With a compiled program, the programmer must go through the drudgery of compiling the program before it can be run, while an interpreted program is ready to go as soon as the typing is finished. However, a compiler can generally perform more sophisticated transformations than an interpreter can. Also, a compiled program will run more quickly than one that is merely interpreted, because a compiler needs to translate a line of code into machine instructions only once, whereas an interpreter may have to do it over and over again. BASIC is an example of an interpreted language; compiled languages include COBOL, PASCAL and C.

## So, What Is C?

Thomas Aquinas once noted that all things bear the mark of their creator, and the C language is no exception to this rule. C was invented in the mid-1970s by Dennis Ritchie, a programmer at Bell Laboratories. Ritchie created C specifically to rewrite the UNIX operating system. UNIX had originally been written in assembly language on a PDP-11 minicomputer, which meant that it was fast and powerful but could not be ported to other computers. While inventing C, Ritchie tried to devise a language that had the power, speed and flexibility of assembly language, but had the portability of high-level languages.

In 1978, Ritchie and Brian W. Kernighan published *The C Programming Language*. This book is one of the main reasons C is as widespread as it is today. In it, the creators of C give a clear, precise and thorough definition of the language. *The C Programming Language* is the bible of C, a standard work to which all programmers can refer when writing their programs. This

means that C programming is remarkably uniform, regardless of the machine on which you are working. BASIC and PASCAL have "dialects;" UCSD PASCAL, for example, differs quite a bit from *Turbo PASCAL* because there is no uniform standard for PASCAL.

Thanks to *The C Programming Language*, however, there is a uniform definition of C, which means that any program written in C can be ported with minimal tinkering to any computer for which anyone has written a compiler. In today's expanding computer market, it is difficult to underestimate the advantages this gives a programmer.

Because C is specifically modeled after assembly language, it has been called a "medium-level" language. The programmer doesn't have to worry about specific registers or specific instructions, but it allows a programmer to employ all the power of the computer almost as directly as he can with assembly language.

The price, of course, is that a C program often can be quite terse and difficult to understand. Also, because C was written by experienced programmers for experienced programmers, C makes very little effort to protect a programmer from himself. Unlike PASCAL, a programmer can easily write a program that is legal and compiles correctly, but crashes the system. Also, its symbols, or "operators," closely resemble each other. Therefore, a slight mistake in typing by a programmer will create a legal program that compiles, but behaves very differently from what the programmer expects.

For this reason, C is not a good language for a beginner. However, it is an excellent second language for a programmer who has worked most of the beginner's mistakes out of his system with a more forgiving language.

## How Does C Work?

C is a structured language. What this means is that a program is assembled out of a number of subprograms, each of which performs a discrete task. If this concept seems a little difficult to grasp, consider the following example.

Suppose you want to turn a file of text into uppercase letters and print it on the screen. This job seems simple, but a program to do it must perform five tasks:

1. Accept the name of the file to open

detailed knowledge of the microprocessor. Also, a high-level language allows the programmer to concentrate on the task being executed, rather than on the details of registers and instructions, which means that programs can be written more quickly than in assembly language. However, because a high-level language is more general than assembly language, a program written in a high-level language can be moved from one computer to another.

Naturally, a programmer must pay a price to use a high-level language. A program written in a high-level language cannot be tailored to the microprocessor, so it will run more slowly than if it were written in assembly language. Depending on the language,



2. Open the file
3. Read the text from the file
4. Turn the text into uppercase letters
5. Write the transformed text onto the screen

A good program will also perform the following tasks:

1. Check that the file requested actually exists
2. Check that the file requested is actually a text file rather than a file of machine language
3. Close the program neatly when the work is finished
4. Stop processing if a mistake occurs

A structured language like C allows you to write a separate subprogram, or "function" for each of these tasks. The functions communicate by passing values to each other. The value being passed can be an integer, a character, or — most commonly — an absolute address in memory where a function can find a chunk of data to manipulate.

This passing of absolute addresses, or "pointers" is the most efficient way of manipulating data because by passing one integer, a function can be pointed at a large amount of data. This, of course, speeds up a program's execution.

The use of structured programming gives you two additional advantages. First, it is easier to debug a function than an entire program, because the function can be isolated from the operation of the program as a whole. Second, once a subprogram is perfected, it can be stored away and used again and again in different programs. This allows you to create "libraries" of reliable functions that you can pull off the shelf whenever you need them.

C adds some extra tools to help programmers construct programs. To begin, C allows you to pre-compile functions and store them in libraries (also called "archives") in compiled form. These pre-compiled functions are added only when the program is loaded into memory; this spares you the trouble of having to re-compile the same code again and again. Next, C adds a pre-processor that expands user-defined code and pulls in special material stored in "header files." This allows you to store often-used definitions in one file and pull it all in just by adding one line to your program.

So, when a C program is compiled, the pre-processor first reads the file of source code, prepends any header files

you requested, and expands any user-defined macros in the program. This pre-processed file is then handed to a parser, which examines the program to see that it is written in legal C and translates it into a logical structure. The output of the parser is then handed to a code generator. Finally, the output of the code generator is handed to a linker, which opens the libraries and adds the archived functions to create the executable program.

This sounds complicated, and it is. For that reason, most C compilers include a command, called `cc`, which guides a program through the compilation process automatically. For example, to compile the program `test.c` with the *Let's C* compiler, all you have to type is: `cc test.c` and the compiler takes care of the rest.

### A Brief C Programming Session

A C program must have at least one function, which must be called `main`. This function tells the computer to begin working. Here is a simple C program; all it does is print the message "Hello, world!" on the screen:

```
main( )
{
    printf("Hello, world!\n");
}
```

We've already explained the significance of `main`. The parentheses indicate that `main` names a function rather than a variable. If `main` took any data to process (or "arguments"), they would be named between the parentheses.

The braces, { and }, fence off material that is subsidiary to `main`. The function `printf` performs formatted printing. The line of characters (or "string") `Hello, world` is the argument to `printf` (what `printf` is to print). The characters `\n` stand for a carriage return, and the semicolon (;) at the end of the command tells C that the function is completed.

One point to remember is that `printf` is *not* part of the C language. Rather, it is a function that was written earlier, probably by the people who wrote your compiler, then compiled and stored in a library for later use.

Although most C programs are much more complicated than this example, they all have the same structure: a function called `main` that begins processing, the fencing off of blocks of code with braces, calling stored functions from libraries, and passing them data as arguments.

### So, Is C for Me?

If you are a beginner who has little or no programming experience, C is probably not for you. You will most likely be frustrated by C's terseness and by its ability to bring down the operating system in spectacular fashion should you make what appears to be a trivial mistake.

However, if you are an experienced programmer, especially if you have worked with assembly language or PASCAL — or better yet, with both — you will be delighted with C's power, speed and flexibility. You will find that the ability to create your own libraries of functions (or to purchase specialized libraries from software vendors) to be a great convenience. And you will find that C puts all of the controls at your fingertips.

If you are a *patient* beginner, you may be able to learn C as a first language. You must be willing to work carefully, and work to grasp the concepts of C programming before you plunge into major projects. If you are patient, however, and willing to work, you will someday be experiencing the greatest pleasure being a computer programmer has to offer: to recognize a problem, write a program that solves it, and see the program work as you planned, thanks in part to the power of C.

### For More Information

Many excellent books have been written to introduce the C programming language. As mentioned earlier, the bible of C programming is *The C Programming Language* by Brian W. Kernighan and Dennis M. Ritchie (Prentice-Hall, Englewood Cliffs, NJ, 1978). If you are an experienced programmer, especially if you are experienced with assembly language, this may be all you need.

If you are experienced in working with BASIC, you may want to consider *Going from BASIC to C* by R.J. Traister (Prentice-Hall, Englewood Cliffs, NJ, 1984).

*Programming with Let's C*, by Dick Vile (Scott Foresman & Co, Chicago, 1987) is a tutorial for beginners that concentrates on *Let's C*, a \$75 compiler package. Another excellent introduction is the *C Primer Plus* by M. Waite, S. Prata and D. Martin (Howard W. Sams & Co., Indianapolis, 1984). This, however, concentrates on another C compiler that costs \$500.

Next month we'll begin programming in C.



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**Goal Solutions**, the first in a series of memory-resident modules for Lotus 1-2-3 to enhance the productivity of Lotus spreadsheet users. For PC, XT and AT Compatibles. **ENFIN Software Corporation**, 6920 Miramar Road, Suite 106A, San Diego, CA 92121; in California (800) 722-4372, outside California (800) 922-4372, \$49.95.

**960K Memory Upgrade Kit**, comes complete with etched, drilled and solder-coated auxiliary printed circuit board, sockets and all required switches, capacitors, resistors and integrated circuits. Actual memory chips not included. For Sanyo MBC-550/555 only. **North-east Electronics**, 1219 University Ave. S.E., Minneapolis, MN 55414; (612) 331-1904, \$35 plus \$2 S/H.

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**PSM: Achiever**, the first in a series of personal success manager tools. For PC, XT and AT Compatibles. **Motherboard Corporation**, 1120 Lincoln, Suite 1101, Denver, CO 80203; in Colorado (303) 832-7222, outside Colorado (800) 654-0044, \$149.

**FirstMenu**, an applications manager for floppy and hard drive computer systems. For PC, XT and AT Compatibles. **Harvey Software**, Division of BHC, Inc., P.O. Box 06596, Ft. Myers, FL 33906; (813) 482-8600, \$39.95.

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**Menu Plus+**, a memory-resident menu system for your hard disk. For PC, XT and AT Compatibles. **Sigma Software, Inc.**, 1009 Sullivan Ave., South Windsor, CT 06074; (203) 644-3401, \$39.95.

**ShortCut**, a memory-resident file manager with pop-up capabilities. For PC, XT and AT Compatibles. **Mossy Rock Systems**, 5709 Platina Ct., P.O. Box 420876, Sacramento, CA 95841; (916) 334-5542, \$49.95.

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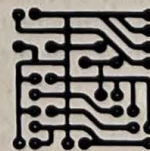
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## Personalizing Your System Profile

By Kevin Nickols  
MS-DOS SIG Manager

**A** very handy feature has recently been added to the Delphi software that allows every user to make changes to their own account. Called the "Settings Subsystem," it allows you to tailor the responses of the system to whatever your individual requirements might be and the characteristics of your terminal.

You enter the Settings area of the system from within your personal Workspace, accessible from the main MS-DOS SIG menu. Just type `WD` to enter your Workspace, then type `SET`. There you will be greeted by the Settings Menu. If you have your system prompts turned off (Prompt Level 1), just type a question mark (?) and hit `ENTER` to display the menu.

### SETTINGS Menu:

BUSY-Mode	Password-Locked
DEFAULT-Menu	SET-High-bit
DOWNLOAD-Line-terminators	SLASH-Term-settings
ECHO-Mode	TERMINAL-Type
EDITOR	TIMEOUT
KERMIT-SETTINGS	UTILITIES
LENGTH (Lines/page)	WIDTH (Columns)
NETWORK-PARAMETERS	XMODEM-SETTINGS
PASSWORD (Change)	HELP
PROMPT-Mode	EXIT

Now, at first glance, some of the items look pretty complicated, don't they? Let me assure you, some of them are. We will take a look at a few of the more simple items first and leave the complicated ones for later. But let me warn you to be very, very careful about making changes to items you don't fully understand.

As you might recognize, many of the items here can be set from any area on Delphi with the slash commands, such as `/PR 1` to turn off the system prompts, `/GAG` (or `/BUSY`) to silence pages from other members and mail notification, `/LE 24` to set your screen length to 24 lines, and so forth. But using the slash commands these changes are only temporary, and will be reset when you log off and later back on to the system. When you make the changes here in the Settings area, though, they become part of your default profile until you purposely change them.

The first thing to remember is that online help is available. Just enter `HELP` and an explanation of the Settings feature will be displayed, along with a list of each item on the menu. Then you can enter one of the "subtopics" to receive an explanation about that particular menu item.

### Busy Mode

Entering the Busy Mode settings option allows you to set your default as either "busy" or "not busy," not busy being the standard system default. This accomplishes the same as

the slash command `/GAG`, or `/BUSY`, which stops the interruptions of people paging you or sending you messages with the `/SEND` command, and the notification from the system that you have received a mail message. The difference in "gagging" yourself here, rather than with the `/GAG` command, is that the busy mode then becomes part of your default profile and will be in effect each time you log onto the system.

### Default Menu

The Default Menu selection allows you to set the area of Delphi that you want to go directly to each and every time you log on. The default menu when you first join Delphi is, of course, Delphi's Main Menu. From here you must type `GROUP MSDOS` (or just `GR MS`) to take you through the Groups & Clubs Menu and into the MS-DOS SIG. If you want the system to drop you immediately into the MS-DOS SIG each time you log on, bypassing all the menus in between, just change your default menu here to `GR MS`. This will greatly speed up your entry into the group and save lots and lots of keystrokes.

### Password Change

Just as it sounds, the Password Change item allows you to change your password. This is something you should do fairly frequently to make sure the security of your account is never compromised.

### Prompt Mode

The Prompt Mode setting allows you to set the level of the prompts displayed by the system. Prompt Mode 3 tells the system to display a full menu every time you enter an area, Prompt Mode 2 displays a single-line prompt listing the available commands, and Prompt Mode 1 displays only the briefest of prompts for use after you have completely learned your way around the system. This functions the same as the immediate `/PR` command, but becomes a standard part of your default profile.

### Editor

The Editor item allows you to select the editor you are dropped into when you create files and messages with the `/EDIT` parameter. The system default is called the EDT editor, a product of Digital Equipment Corporation that is very powerful, but also quite difficult to learn to use. More popular is a much simpler line editor called "Oldie," which uses simple slash commands. If you want to try the Oldie editor, enter `OLDIE` in this area.

### Width and Length

Simply enough, these two items allow you to set your default screen length and width. They function the same as the immediate `/WI` and `/LE` commands, but become your default. On MS-DOS machines, your screen width should



commonly be set for 80 columns (although 79 actually seems to work better) and your screen length for 24 lines. A handy tip to keep in mind is that if you set your screen length to zero, you will eliminate all of the "more?" prompts that force you to hit ENTER to move to the next page. Then you can use CONTROL-S and CONTROL-Q to stop and start the scrolling as you like.

### Timeout

Timeout is a handy new feature that Delphi recently added to the software. Let's say you are online late at night and, horror of horrors, fall asleep at the keyboard. When the system doesn't detect any activity at your keyboard, it will ask you to respond and, if you don't, automatically log you off. The standard default time for this feature is 10 minutes, but you can change it to whatever you like.

### Utilities

The Utilities feature is particularly important because it can help you avoid problems as you experiment with your settings. Before you begin changing your default settings, you can enter the Utilities item and save your current profile to a file in your Workspace. Then you can experiment with the confidence that you can later reload your standard settings profile.

In Utilities, you have three options: LIST, DUMP and RELOAD. They all do just what they sound like they should. With LIST, you can display a listing of your current settings; DUMP will save your current profile to a file in your Workspace called PROFILE.DMP, which conveniently allows you to edit it there; and RELOAD will reload the profile after

you have edited it or managed to mess it up while you're experimenting.

There is also a special settings option called "Key." All users have a profile with a key of zero, the profile that is used each time you log on. But some users may wish to have different profiles. The Key option allows you to set up addition profiles of keys one to nine. Each profile key is saved with the command /SAVE #, and can be loaded with the command /RESTORE # at any time, from any area of the system.

As a very simple (and perhaps not very logical) example, let's say you have your default profile (Key 0) set up with the system prompts turned off, your screen length set to zero, screen width to 80, and in the "not busy" mode, which allows other users to page you and send messages.

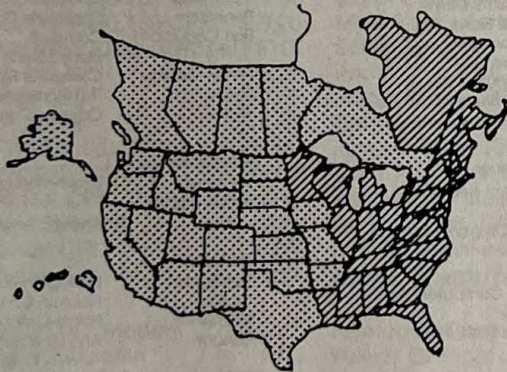
But often, for some reason, you want all these items changed when you come onto the system. You can type /PR 3 to turn on the full system menus, /LE 24 to set your screen length to 24 lines, /WI for a screen width of 40, and /GAG (or /BUSY) to disallow pages and other interruptions from other members.

Now all you have to do is enter /SAVE 1 and a second profile (Key 1) with these changes will be created. The next time you log onto Delphi, your original default profile (Key 0) will be in effect, but you can quickly change to the alternate profile by entering /RESTORE 1 at any time, wherever you are on the system.

It looks like we have managed to cover most of the simple items on the Settings Menu. Next month we will tackle the really complicated ones.

**SS**

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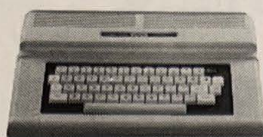
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<b>CALIFORNIA</b> La Jolla Lancaster N. Hollywood Norco Riverside Sacramento San Luis Obispo  Santa Maria Santa Rosa Upland	Affordable Computers Desert Computing Levity Distributors West Custom Studios Famis Computers Software Centre International El Corral Bookstore Paradise Computer Systems Information Systems Unlimited Sawyer's News, Inc. Computer Haven Friendly Computers ECX Computer Co.	<b>MINNESOTA</b> Rochester <b>MISSOURI</b> Aurora Jefferson City St. Louis <b>MONTANA</b> Whitehall <b>NEBRASKA</b> Omaha <b>NEW JERSEY</b> Elizabeth Lake Hopatcong Ocean City <b>NEW MEXICO</b> Alamogordo Albuquerque	Paragon Computers  Southland Electronics Cowley Distributing Software Centre  Rambyte Computer Institute  Computers & Components  Dexport Computer Systems Jefferson Computer Center The Computer & Software Store  New Horizons Computer Systems Page One Newsstand Zia Computers	<hr/> <h2>Canadian and Foreign Distributors</h2> <hr/>	
<b>COLORADO</b> Englewood Security  <b>DELAWARE</b> Wilmington <b>FLORIDA</b> Boca Raton Ft. Lauderdale Gainesville Jacksonville	Whole Life Distributors Video Communications & Computers, Inc.  Nor-Mar — The Smoke Shop	<b>NEW YORK</b> Hicksville Rochester Wappingers Falls <b>NORTH CAROLINA</b> Jacksonville Mt. Airy <b>NORTH DAKOTA</b> Buxton Riverside <b>OHIO</b> Ashland Canal Fulton Columbus Dayton Euclid Fairborn Girard Kettering Mayfield Heights Marion North Olmstead	Innerlogic Computer Center Computer Directions Software City  2 M Systems Mountain Computers  Systematics Computer Associates  Infopro Gemstone Computing The Book Rack Huber Heights Book & Card Computer Warehouse Sandbox Micro Systems Girard Book & News Electronic Connexion Programs Unlimited Marion Computer Center Software Centre International	<b>ARGENTINA:</b> Buenos Aires <b>AUSTRALIA:</b> <b>SYDNEY</b> Kingsford <b>VICTORIA</b> Melbourne	ICP, S.A.  Paris Radio Electronics  Computer Biz
Longwood Melbourne  Miami  Orlando	Software, Software, Inc. Total Information Centers Computerized Applications AA Computer Exchange Florida Computer Resources Electronic Specialty Products City News Stand B & B Office Equipment Computers, Computers, Computers Computer Image Book Mania PC Distributors Rainbow Computer Center J & R Almar Books Computer Trends Sanibel Audio Family Computers Lacey Computer Co. Discount Discs	<b>OKLAHOMA</b> Oklahoma City Tulsa <b>OREGON</b> Eugene Portland <b>PENNSYLVANIA</b> Downington Exton Philadelphia <b>SOUTH CAROLINA</b> Charleston Heights Sumter Travelers Rest <b>TENNESSEE</b> Knoxville	Merit Computers Data Station — Tulsa  University of Oregon Bookstore Megrathea  Downington Computer Center Software City Some Hole In The Wall  Software Haus Micro-Computer Depot Concurrent Technologies Corp.  First Byte Computer Co.	<b>CANADA:</b> <b>ALBERTA</b> Calgary  Edmonton  Grand Prairie	Tesseract Computer Systems The Computer Shop CompuSoft Computique Compu-ware Disk and Chip LEW Computers
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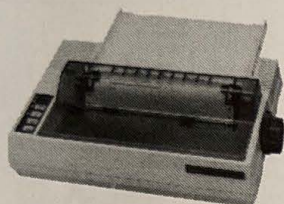
Tandy 200 24K \$510\*  
 Tandy 600 32K \$810\*  
 Tandy 102 24K \$339\*



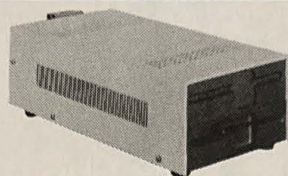
Color Computer 3  
 w/128K Ext. Basic \$169



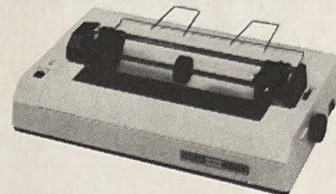
Tandy 1000 EX \$569.00  
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